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ICONES DESCRIPTIONES ET HISTORIA.

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DAWSON TURNER, ARM. M.A.

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ET ALIARUM SOCIETATUM SOCIO.

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IMPENSIS J. ET A. ARCH, IN VICO CORNHILL DICTO.

MDCCCXIX.

F U C I,
OR,
COLORED FIGURES AND DESCRIPTIONS
OF THE PLANTS,
REFERRED BY BOTANISTS TO THE GENUS FUCUS.

By DAWSON TURNER, Esq. A.M. F.R.A. & L.S.

HONORARY MEMBER OF THE IMPERIAL ACADEMY NATURÆ CURIOSORUM, OF THE ROYAL ACADEMY OF
STOCKHOLM, OF THE ROYAL IRISH ACADEMY, OF THE HONORABLE DUBLIN SOCIETY,
OF THE ACADEMY OF SCIENCES AT ROUEN, OF THE NATURAL HISTORY AND
WERNERIAN SOCIETIES OF EDINBURGH, OF THE PHYSICAL SOCIETY
OF GOTTINGEN, &c. &c.

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IN closing this Work, the Author feels it incumbent upon him to apologize to his numerous friends, for the frequent irregularities in the appearance of the later numbers, and to acknowledge, however painful may be the avowal, that the various delays which have attended its progress, have in great measure arisen from private circumstances, against which there was no possibility of guarding. That it is terminated in a manner less perfect than what at its commencement had fondly been anticipated, is to him a far more painful consideration, and calls still more loudly for an apology; but, this he begs to add, is principally attributable to the more than usual progress made of late years in the knowledge of this branch of Natural History, which, by the numerous expeditions in quest of science, has been extended to such a degree, that it is difficult to imagine what number of species will ultimately be found; so that, though the present Publication has already far exceeded the limits originally contemplated, it ends incomplete, leaving the feeling that our knowledge is in its infancy; and that, till more is seen, the point which the Author had principally in view, *that* of reducing the Marine Algæ in general under natural families, in a well organized system, cannot be satisfactorily accomplished. Various attempts have meanwhile been made to bring this interesting tribe of plants under a new arrangement; and one in particular by M. Lamouroux, of Caen, a correspondent of the French Institute, which, as ingenious, and embracing a comprehensive view of the subject, is intitled to great credit. To these, however, the Author is not ambitious of adding; but rather feels a satisfaction in taking leave of his readers with the consciousness of having laid before them a set of figures, upon the accuracy of which they may rely; and which, as representations of things that are, will, through every change of human opinions, retain an undiminished value; while they may serve, in the hands of some more able, and more fortunate successor, as the ground-work of that which he had hoped to have accomplished himself.

Yarmouth, 16th Jan. 1819.

DECLARATION

of Independence

We the Representatives of the United States of America, in General Congress assembled, do hereby declare that these United States are, and of right ought to be, free and independent States; that they are absolved from all allegiance to the British Crown; that all political connection with Great Britain is hereby totally dissolved; that as a free and independent State, they have full power to levy war, conclude peace, contract alliances, establish commerce, and to do all other acts and things which independent States may lawfully do.

And for the support of this Declaration, we have signed our names, and have subscribed our lives, fortunes, and sacred honor.

In witness whereof, we have hereunto set our hands and seals, at the City of New York, the fourth day of July, in the second year of the said Declaration of Independence.

Attest: My hand and seal, this fourth day of July, 1776.

John Jay

George Washington

John Adams

Benjamin Franklin

Thomas Jefferson

James Smith

Richard Stockton

John Witherspoon

Robert Livingston

David Mervin

James Wilson

George Clymer

Thomas Mifflin

Abraham Clark

Samuel Osgood

Andrew Ellicott

James Smith

Richard Stockton

John Witherspoon

Robert Livingston

David Mervin

James Wilson

George Clymer

Thomas Mifflin

Abraham Clark

Samuel Osgood

Andrew Ellicott

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* It is entirely by mistake that this plant, both in the description and on the plate, is called *F. pilulifer*, a name previously given to a very different species: the reader is therefore requested to alter it.

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† This synonym to *F. graminifolius* has appeared since the publication of that plant in this work.* It was by an oversight that this synonym was omitted in the description of *F. Brownii*. (See p. 2, vol. iv.)

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* The plant published under this appellation, Vol. IV. Plate 236, page 94, will be found in this Index as *F. globulifer*, which it ought originally to have been called.

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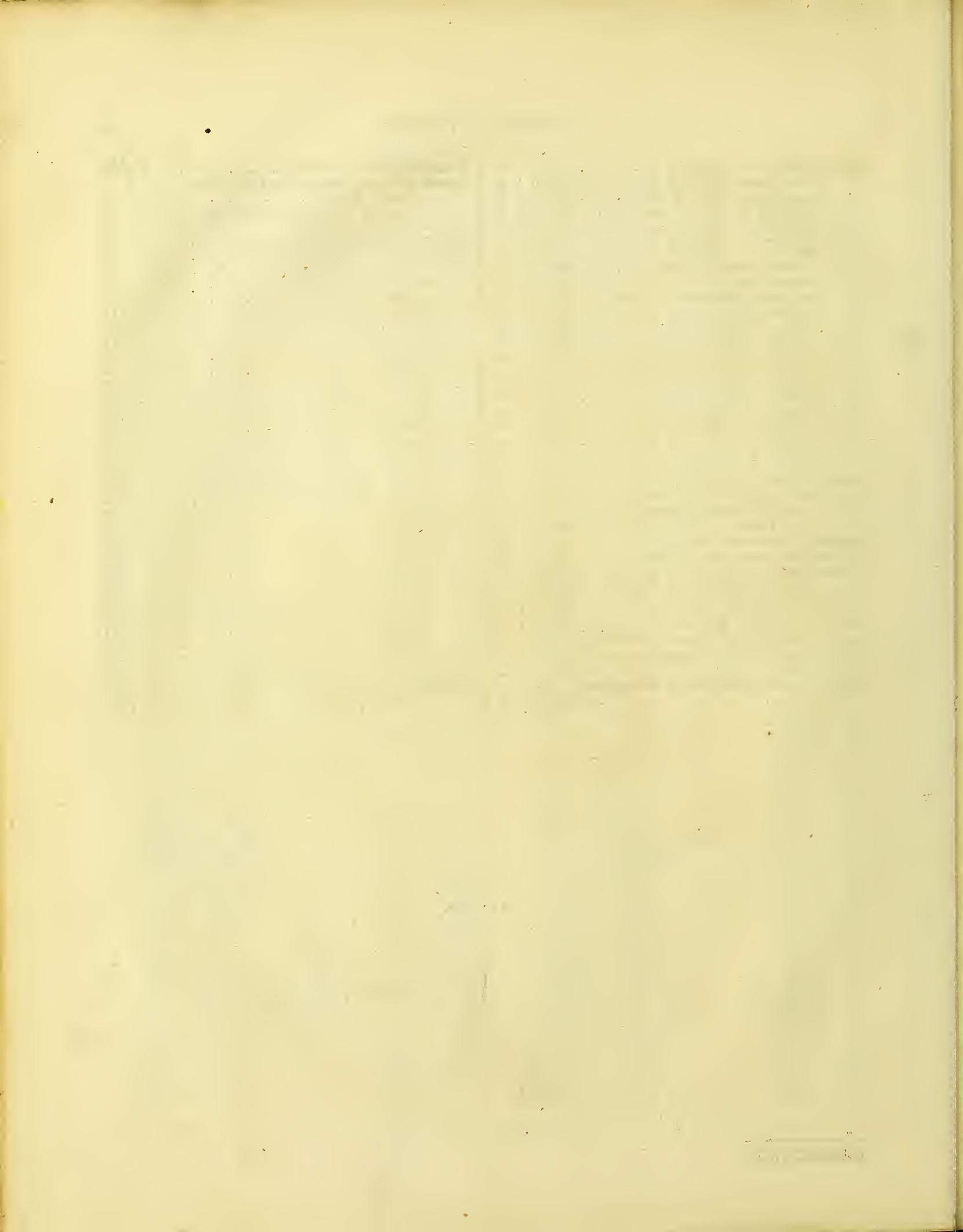
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FINIS.



HISTORIA FUCORUM.

197.—FUCUS BROWNI.

Fucus, fronde coriaceâ, compressâ, alternatim decomposito-pinnatâ; caule ramisque linearibus flexuosis, ortu retro-flexis, mox horizontalibus, articulatis; articulis e basi solutâ ramos edentibus; ramis ultimis abbreviatis: vesiculis subrotundis, in ramis petiolatis: receptaculis sub-cylindraceis, torulosis, terminalibus.

HABITAT in Occidentalibus Novæ Hollandiæ oris. *D. Menzies*.—Novæ Hollandiæ ad littora, in loco “*King George’s Sound*” dicto. *D. Brown*.

Perennis.

RADIX callus lignosus, explanatus, difformis, crassus, supernè planus, diametro circiter semipollicaris.

FRONS instructa caule unico, quadripedali et ultrâ, plano, vel plano-compresso, a basi ad apicem servante eandem ferè latitudinem duarum linearum et crassitiem unius, toto flexuoso, vel, ut aptius loquar, eâ ratione quam *ziczac* dicunt composito, scilicet toto constante ex serie articularum vix unguem longorum, hùc illùc alternatim spectantium, basi solutorum; caulis indivisus, et quâ basi proximus nudus, cæteroquin obsitus ramis ex singulorum articularum basi solutâ exeuntibus, qui horizontales aut etiam ortu deflexi quasi ipsi articuli producti videntur; rami idcirco distichi et alterni, sed sæpe diffracti, palmares et ultrâ, ortu caule tantillum angustiores, sed hinc sensim usque ad apices angustati, ubique tamen plani, atque etiam ubique eâdem quâ caulis ratione conficti, hujusque prorsus similes, nisi quòd articulos habeant duplo triplove breviores, ipsi quoque indivisi et prope ortum nudi, sed sursum versus ex articularum basi solutâ edentes novam ramorum seriem, qui sesquipollicem longi nullum articularum vestigium ostendunt, sed flexuosi sunt, et ubique plani, quamvis haud quartam lineæ partem latitudine exuperent, suntque per totam longitudinem pinnati aliis propemodum capillaceis, attamen planis, horizontalibus, alternis, vix lineæ spatio sejunctis, et vix semiunguem longis, sed rursus unum alterumve adhuc minorem sparsim e latere emittentibus; *vesicula* in ramis, uti videtur, tantummodò inferioribus et horum juxta basin sitæ, rarò, plures quàm una in singulis, et ita infrequentes ut sæpe magna stirpis exemplaria iis prorsus careant, formæ obovatæ, vel ovato-sphæricæ, *Abri precatorii* seminum magnitudine, breviter petiolatæ, extrinsecus læves, intus cavæ et vacuæ: rami inferiores toti fibrillosi apparent, quasi e foliis compositi setaceis, sed ea est horum cum reliquâ fronde similitudo ut plantam verè foliosam dicere non sustineam.

FRUCTIFICATIO in ramis sita ultimis, qui tunc intumescences *receptacula* fiunt oblonga, figuram induentes moniliformem ob tubercula sphærica inclusa intervallis perquam exiguis dissita; hæc tubercula medio pertusa intus fovent semina aliquot oblonga fusca limbo pellucido cincta, unâ cum fibris plurimis articulatis brevibus simplicibus, et corpusculis minutissimis, albis, diaphanis, eorum jam sub *F. tuberculato* et aliis memoratorum similibus.

COLOR, qui verisimillimè est in recente olivaceus, fit in exsiccatâ æquè ac in rursus madefactâ niger.

SUBSTANTIA coriacea, in caule ad lignosam accedens.

OBS. Crescendi modus huic Fuco insignitè densus et dumosus: articulata facies, in plerisque exemplaribus maximè notabilis, est in aliis, aut saltem in quibusdam ramis, ferè obsoletus.

Perlustranti Fucos mecum a D. Brown benevolè communicatos, ut speciem seligerem dignam quæ nomen ferret amici jure inter primos habitî, nulla sese obtulit hîc depictâ aptior ut ad id seponeretur. Sive enim perpendatur structura longè a reliquis ferè omnibus recedens, seu formæ elegantia a ramis pendens ita confictis dispositisque ut tota stirps rete artificiosissimè textum fimbriamve nigram referat, species est quam nemo sine admiratione præteriret, et cui primus tribueretur locus. Quamvis igitur primitus fuerit ab optimo Menziesio in Novæ Hollandiæ oris lecta, diuque extiterit in Herbario Banksiano exemplar ab ipso ibi positum et *F. thuyoidis* nomine aptissimo insignitum, nihilo tamen minus non dubitavi hîc *Fucum Brownii* appellare, cùm sit adhuc a nullo scriptore publici juris facta, probèque sciam fore æquè Menziesio ac mihi gratum si Brownio nostro morigerari possimus. Non speravi me sic faciendo aliquid fore ad amici honorem collaturum; quis enim, cui notus est, non agnoscit mentem in Naturâ scrutandâ acerrimam accuratissimam felicissimo successu usam, quis, cui non notus, nescit quantum sibi honoris sit partus, Novæ Hollandiæ historiâ naturali investigatâ, ejusdemque Florâ demùm editâ? Illud idcirco solum quæsivi, ut tester quàm memorem in bene meritum animum præstem, cùm propter amicitiam erga me semper summam, tum præcipuè propter benevolentiam quâ Fucos omnes a se lectos, pulcherrimos illos Naturâque maximè paradoxâ præditos, ad hoc opus ditandum contulit. *Fucus Brownii* manifestè ad illam Fucorum familiam attinet, de quâ copiosè disserui snh

F. retroflexo, huic ipsi speciei summoperè affinis, sed primo statim aspectu dignoscendus per habitum utriusque dissimilem, et per ramos ultimos in illo perbreves situmque horizontalem nunquam non servantes, in hoc elongatos erectoque patentes; unde fit ut unius crescendi modus laxis sit atque diffusus, alterius arcus, ramis ita densè constipatis ut in stirpe totâ simul visâ singulorum figura vix sit distinguenda.

a. <i>Fucus Brownii</i> , magn. nat.			
b. <i>unus e ramis minoribus</i> , magn. auct.	-	-	6.
c. <i>alter cum vesiculâ</i> , magn. nat.			
d. <i>alter cum fructu</i> , magn. auct.	-	-	6.
e. <i>receptaculum</i>	-	-	5.
f. <i>receptaculum horizontaliter dissectum</i>	-	-	4.
g. <i>fibræ, semina, et granula</i>	-	-	1.

HISTORY OF THE FUCI.

197.—FUCUS BROWNII.

Fucus Brownii, frond coriaceous, compressed, alternately repeatedly pinnated; stem and branches linear, flexuose, bent downwards at their origin, then horizontal, composed of joints unconnected at their base, whence the branches issue; ultimate branches short: vesicles roundish, standing on petioli upon the branches: receptacles sub-cylindrical, torulose, terminal.

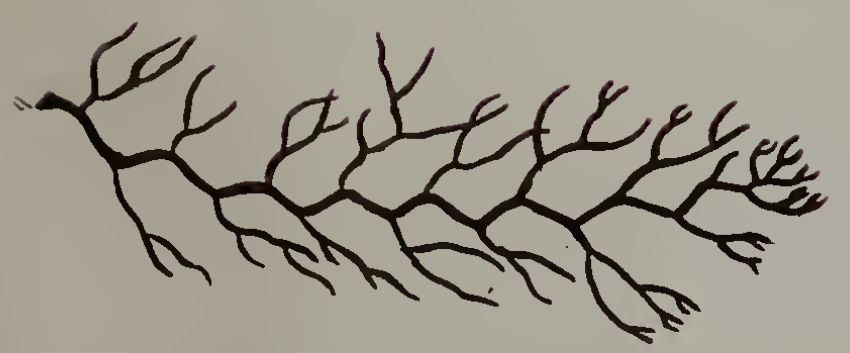
On the western coast of New Holland. *Mr. Menzies*.—In King George's Sound, on the coast of New Holland. *Mr. Brown*.

Perennial.

ROOT, an expanded callous base, of a substance inclining to woody, irregular in its shape, flat in its upper part, about half an inch in diameter.

FROND, furnished with a single *stem*, four feet or more in length, flat, or between flat and compressed, preserving, from its base to its apex, an everywhere equal width of two lines, and a thickness of one, the whole of it flexuose, or, to speak more characteristically, growing in a ziczac manner, being entirely composed of a series of joints each scarcely half an inch long, standing diagonally, and pointing alternately in opposite directions, the top of each being inserted somewhat above the bottom of that above it, so that the lower part of each projects; the stem is undivided, and in the part nearest the base naked, in other places beset with branches originating from the projecting ends of the joints, and growing in an horizontal or deflexed direction, as if they were continuations of them:—such being the disposition of the branches, they are necessarily distichous and alternate, though, from their being frequently broken off, this latter circumstance is not always visible, their length is about four or five inches, their size at their origin little inferior to that of the stem, but gradually diminishing to the apices, yet every where flat, and every where formed in the same manner as the stem, which they perfectly resemble, except that their joints are two or three times shorter; they also are undivided and naked near the base, but in their upper part throw out from the projecting extremities of their joints a new series of branches, which are about an inch and half long, and shew no symptoms of a jointed structure, but are flexuose, and flat throughout, though not above the fourth part of a line in width, and are also from top to bottom pinnated with others nearly capillary, yet still flat, horizontal, alternate, standing

scarce



Dr. J. H. Espinosa

Junus Borrui.

scarce a line from each other, and themselves scarcely a quarter of an inch long, but bearing one or two scattered lateral ones much smaller; *vesicles* growing, apparently, only on the lower branches, and on no part of these except towards the base, seldom more than one on each branch, and of so uncommon occurrence that large specimens may often be seen wholly destitute of them, of an obovate or roundish form, as large as the seeds of *Abrus precatorius*, supported on short petioli, externally smooth, internally empty: the lower branches seem quite fibrous, as if composed of a quantity of small leaves, but these bear too strong an analogy to the rest of the frond for me to venture on their account to regard this plant as really leafy.

FRUCTIFICATION, placed on the ultimate branches, which swell into oblong *receptacles*, and, from the situation of the tubercles they contain at short distances from each other, become moniliform; the tubercles are spherical, perforated with minute pores, under which lie a few oblong brown seeds surrounded with a pellucid limbus, together with numerous, short, simple, jointed fibres, and very minute, white, transparent granules, similar to those already mentioned under *F. tuberculatus*, and others.

COLOR, in the recent plant most probably an olive green, but turning black from drying, and continuing so notwithstanding any subsequent immersion.

SUBSTANCE, coriaceous, approaching in the stem to ligneous.

OBS. The habit of this *Fucus* is singularly thick and bushy: the jointed structure, which is very remarkable in most specimens, is in others, at least in some of their branches, nearly obsolete.

Mr. Brown, the author of the *Flora of New Holland*, is too well known to all who have the good fortune of being acquainted with him, and to the world in general by his various publications, as one of the most acute, most accurate, most indefatigable, and most fortunate of the Naturalists of the present day, for it to be possible for me by any thing I could say on the subject to add to the credit he has already obtained for himself; but I must be allowed in this place more particularly to express to him my obligations for the various communications he has made to this work, which owes to him many of the most beautiful and most extraordinary of its species; among which I could select none more worthy, in my opinion, than the subject of the present plate, to bear the name of a friend I so sincerely respect. *F. Brownii* belongs very evidently to the tribe of Fuci of which I have already spoken at length under *F. retroflexus*, and is nearly related to that very *Fucus*, from which it differs strikingly in the shortness of its extreme branches, and in the whole of them retaining their horizontal direction, from which circumstances the habit of the two plants is altogether dissimilar; that of *F. retroflexus* being loose and spreading, while *F. Brownii* is so compact and bushy, that, seen in its natural state, its several parts are scarcely distinguishable from each other. Mr. Menzies, who originally found *F. Brownii*, and by whom a specimen was many years ago communicated to the Banksian Herbarium, had very aptly denominated it *F. thuyoides*, a name, which, having never been published, I am sure of his readily concurring with me in changing for that of our mutual friend. The whole of the smaller branches of this plant look like a most beautiful network of black lace. For the specimen here figured I am indebted to the kindness of Mr. Brown.

- | | |
|--|----|
| a. <i>Fucus Brownii</i> , natural size. | |
| b. <i>small branch</i> , magnified - - - | 6. |
| c. <i>branch with vesicle</i> , natural size. | |
| d. <i>branch with fructification</i> , magnified - - | 6. |
| e. <i>receptacle</i> - - - | 5. |
| f. <i>horizontal section of the same</i> - - - | 4. |
| g. <i>contents of a tubercle</i> - - - | 1. |

Fucus crinalis, fronde cartilaginous, cylindrical, capillary, irregularly branched, bifid or trifid at its apex; branches nearly horizontal, mostly simple, and generally growing on one side, the upper ones often clustered, the apex swelling into oblong capsules acuminate at both ends.

β. *tricuspidatus*; apices always trifid.

Fucus tricuspidatus. THORE, MSS.

On the English and Irish coasts.—Rocks in the sea at Sheringham in Norfolk.—At Sidmouth, growing on *F. abrotanifolius*. Mrs. Griffiths.—Near Ilfracombe. Mr. Hare.—Rocks at Kilmouth in Cornwall. Mr. Rashleigh.—At Brighton, forming large patches on the flat chalk-rocks about low-water-mark. Mr. Borrer.—Sides of Belfast Lough. Mr. Templeton.—β. on the western coast of France. Professor Mertens.

Annual.

ROOT, a very small callous disk, throwing out numerous, cylindrical, creeping, branched fibres, variously matted together and rising at length into new fronds.

FRONDS, numerous from the same base, growing in thick tufts, from an inch and half to two inches long, cylindrical, scarcely thicker than human hair, erect, but often incurved at their summits, some undivided, others twice or thrice irregularly forked, particularly near the apices, which are generally bifid or trifid with short patent segments, most of them irregularly beset with divaricated branches generally placed two or three together on the same side of the frond, separated from each other by intervals, which, though uncertain, are for the greater part longest in the lower part of the stem and in the upper so short that the branches there look clustered; their length seldom exceeds a quarter of an inch, and they are generally simple, but occasionally they extend to a greater length, and are, like the primary shoots, beset with smaller ones or forked; sometimes too they are twisted like tendrils; the apices are everywhere obtuse, as if truncated.

FRUCTIFICATION, placed at the extremities of the branches, which then swell and take the form of lanceolate compressed capsules about a line and half long, containing many largish seeds of an irregularly spherical shape and deep red color.

COLOR, a beautiful semitransparent purple.

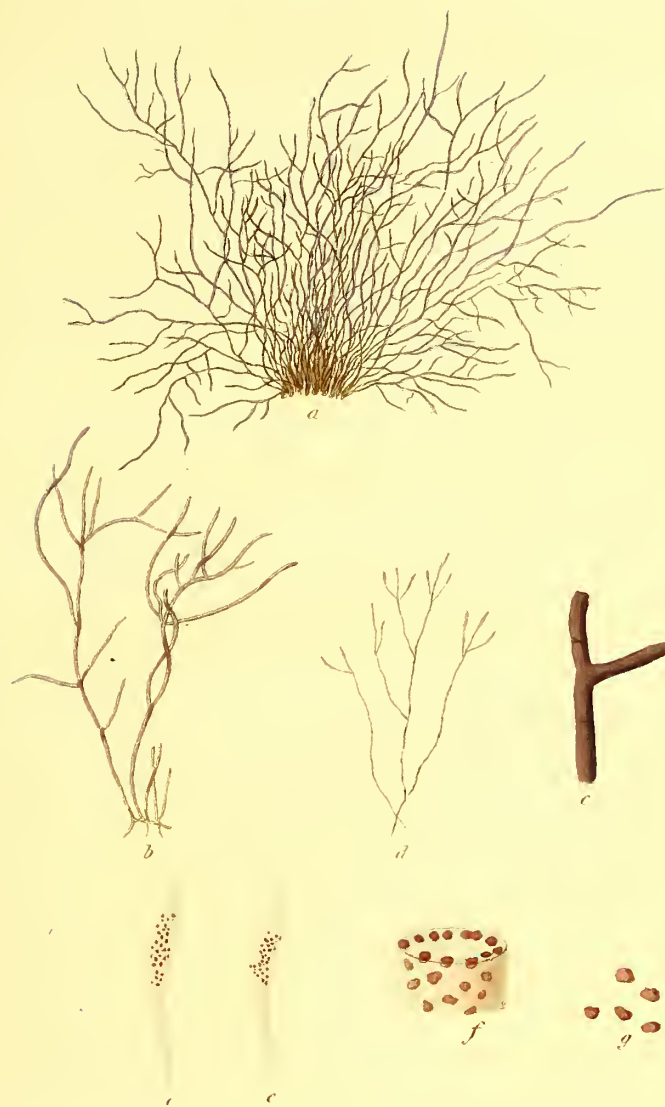
SUBSTANCE, between cartilaginous and horny, flexible, tough.

The variety β, of which I have seen only two small specimens sent me by Professor Mertens, differs in nothing that I can discover but a mode of growth somewhat more regular, and trifurcate apices with nearly equal segments; and I should scarcely have introduced it as a distinct variety, were it not for the intention of M. Thore to describe it as a species.

OBS. In drying this *Fucus* adheres very slightly to paper.

F. crinalis is a species with which I have for many years been acquainted, having observed it so long since as the autumn of 1797 growing on the Norfolk coast, and then gathered specimens, which I still possess, for the purpose of examination. I have since then received it from many friends, but have never dared to describe it as distinct, as only the barren state of it had been seen, not being able to satisfy myself whether it might not possibly be either *F. plicatus* in a very early stage, or some strange variety of *F. corneus*, a *Fucus* of which the appearances are so numerous and so variable that it is scarcely possible always to be aware of them. The discovery of the fructification by Mr. Thore has at length decided the question, in addition to which I am happy to have my opinion of its being distinct supported by Mr. Hare, who has paid particular attention to the submersed Algæ of Devonshire, where he has been most favorably situated for the investigation of them. It is to him I am indebted for the specimen here figured, as well as for the name now given to it. Among the British Fuci *F. crinalis* approaches in form and color most nearly to *F. Griffithsia*, the frond of which is at least thrice as thick, and the fructification completely different. In the foreign list it has a very close affinity in the *F. tenuissimus* of Wulfen, figured by Esper, insomuch that I can scarcely persuade myself that the two plants are more than varieties of each other.

a. <i>Fucus crinalis</i> , natural size.					
b. part of the same, magnified	-	-	-	-	6.
c. portion of the frond	-	-	-	-	5.
d. variety β, natural size.					
e. capsules, magnified	-	-	-	-	5.
f. section of a capsule	-	-	-	-	3.
g. seeds	-	-	-	-	1.



Fucus crinalis.

Fucus, fronde cartilagineâ, terete, capillaceâ, vagè ramosâ, apice bi-tri-furcâ; ramis sub-horizontalibus, simpliciusculis, subsecundis, summis sæpe fasciculatis, apicibus in capsulas oblongas utrinque acuminatas intumescens.

β. *tricuspidatus*; apicibus tricuspidatis.

Fucus tricuspidatus. THORE, MSS.

HABITAT in Angliæ Hiberniæque littoribus.—In saxis submarinis prope Sheringham in Norfolciâ.—Apud Sidmouth in Devoniâ, *F. abrotanifolio* agnata. Dna Griffiths.—Juxta Ilfracombe. D. Hare.—In rupibus ad Kilmouth in Cornubiâ. D. Rashleigh.—Apud Brighton, rupes calcareas integumento denso latè vestiens. D. Borrer.—Juxta Belfast. D. Templeton.—β. in Occidentalibus Galliæ oris. D. Prof. Mertens.

Annua.

RADIX, callus discoideus, perpusillus, fibras emittens plurimas, teretes, repentes, ramosas, in novas frondes assurgentes.

FRONDES ex eâdem basi plurimæ, densè cæspitosæ, varièque implexæ, sesqui-bi-pollicares, teretes, capillo vix crassiores, erectæ, apicibus tamen sæpe incurvis, hæ indivisæ, illæ bis terve vagè, præsertim apices versus, dichotomæ trichotomæve, segmentis abbreviatis patentibus, pleræque ramis sparsim obsitæ patenti-divaricatis, subsecundis, intervallo inter singulos incerto, attamen ut plurimum longiore in inferioribus, in summis ita brevi ut fasciculati videantur; hi quoque rami, quamvis plerumque simplices et vix semiunguem longi, nunc producuntur atque aliis sunt obsiti, aut sunt apice bifurci, interdumque est cernere unum alterumve cirri in formam contortum: apices ubique obtusi, quasi truncati.

FRUCTIFICATIO frondis ad apices sita, qui tunc intumescens capsulæ fiunt lanceolata, compressæ, sesquilineam longæ, seminaque includunt plurima, subrotunda, majuscula, intensè rubra.

COLOR pulchrè purpurascens, subdiaphanus.

SUBSTANTIA cartilagineo-cornea, lenta, tenax.

Var. β, cujus duo tantum parva exemplaria a Mertensio missa hactenus vidi, in nihilo, quantum perspicio, differt, nisi quod crescendi modo gaudeat aliquantum magis certo, habeatque ramorum apices trifurcos segmentis subæqualibus: vix ergo pro distinctâ varietate hic recensuissem, nisi verisimile videretur fore olim a D. Thore pro novâ specie descriptam.

OBS. Per desiccationem hæc stirps chartæ vix adhæret.

Diu mihi est cognitus pusillus hic *Fucus*, quem mense Novembre MDCCXCVII in saxis juxta Sheringham detexi, et postea pluries missum ab amicis accepi, sed dubius semper hæsi an jure sit in specierum distinctarum numerum accipiendus; nunc verens ne fieri possit ut sit tantummodò *F. plicatus* nondum adultus, et nunc suspicans esse aliquam e varietatibus *F. cornei*, qui quantum in diversis ætatis stadiis aut in diversis locis natalibus formâ ludere solet nemo Algarum submersarum studiosus ignorat. Fructificatione autem nunc demum a Mertensio acceptâ, exempti sunt scrupuli, et stirpem pro novâ hic exhibere sustinui, favente quoque sententiâ Dni Hare, viri cum in *Fucis* omnibus Damnoniis indagandis acerrimo, tum qui in hoc investigando plurimum operæ posuit. Idem quoque ille primus jussit ut nomine quod hic fert appellaretur. *Fucos* inter Britannicos *F. crinalis* formâ atque colore arctissimè accedit ad *Fucum Griffithsiæ*, cujus frons triplo crassior, et fructus toto cælo diversus. Si cum exoticis conferas, *F. tenuissimus* prostat Wulfenianus, cujus iconem exhibuit Esperus, species huic ita omnibus ferè notis affinis, ut frustra quæram characteres per quos satis dignoscantur specificos.

a. <i>Fucus crinalis</i> , magn. nat.					
b. <i>exemplar seorsum visum</i> , magn. auct.	-	-	-	-	6.
c. <i>frondis pars</i>	-	-	-	-	5.
d. <i>var.</i> magn. nat.					
e. <i>capsulæ</i> , magn. auct.	-	-	-	-	5.
f. <i>capsula horizontaliter dissecta</i>	-	-	-	-	3.
g. <i>semina</i>	-	-	-	-	1.

Fucus Lycopodium, frond cartilaginous, cylindrical, filiform, irregularly divided into a few generally simple branches, covered all over with horizontal, capillary, simple, jointed ramuli.

Fucus Lycopodium. *Ner. Brit.* p. 107. t. 17. (*excl. synonymis omnibus.*)

In the Red Sea. *Viscount Valentia*.—Sent from Ceylon to *Linnaeus*.

Perennial?

ROOT, an expanded callous base, two or three lines in diameter, of an irregularly discoid shape, and a dirty yellowish color.

FROND, cylindrical, filiform, about four inches long, as thick as a crow's quill, rising undivided to the height of about an inch, then forked, with segments between erect and patent, of equal height in some specimens, in others one much longer than the other; sometimes, too, these segments are undivided and completely simple, while at other times they are themselves forked, and frequently are beset towards the apices with one or two short, scattered branches, placed in a direction either patent or between erect and patent, and slightly incurved: the whole frond from the base to the summit is everywhere thickly covered with a profusion of horizontal, cylindrical, filiform, simple *ramuli*, scarcely thicker than human hair, two lines long, exhibiting under the microscope an obsoletely jointed appearance, the dissepiments pellucid, the joints about as long as they are wide.

FRUCTIFICATION, hitherto unknown.

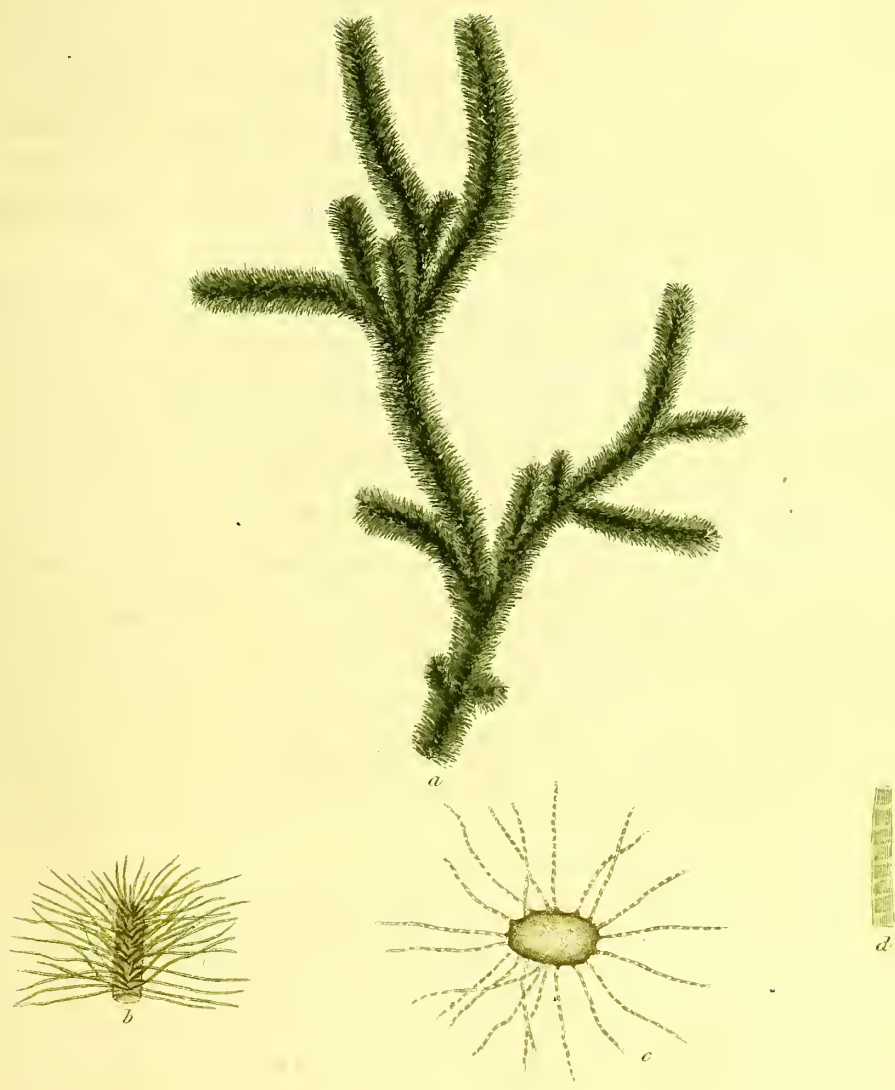
COLOR, a pale dirty brown, often with a tinge of pink.

SUBSTANCE, cartilaginous, stiff, inclining to horny.

Obs. This plant is generally found infested with small corallines, and sometimes quite covered and disguised with a calcareous incrustation:—in drying, it does not in the least adhere to paper.

The figure above quoted from Mr. Stackhouse's *Nereis Britannica* is so characteristic a representation of this plant, that it is impossible for a question to be entertained of its being really designed for it; and, as his drawing was made from the identical specimen in Mr. Woodward's herbarium said to have been found at Yarmouth, an inference may naturally be drawn that *F. Lycopodium* has a claim to a place among the British Fuci. From such an inference, however, I feel myself, most reluctantly, compelled to dissent, being persuaded that, though my friend believed his plant to have been communicated to him from this beach, it was in reality sent from some foreign coast; probably from that of the Mediterranean at no great distance from the Red Sea, whence he received many other Fuci; in which case the specimens possessed by both of us are natives of places near to each other. Into such an error every Naturalist knows how easy it is for the most careful of us to fall, and I therefore trust I shall not be considered as detracting from the well-known accuracy of Mr. Woodward, to which I can bear the most decisive testimony. From an unwillingness ever to change a specific name, I have retained to this *Fucus* that given to it by Mr. Stackhouse, though in so doing I have acted contrary to my judgment; this appellation approaching so nearly to *F. lycopodioides* that it may lead to confusion. These two plants likewise are in their size and form very closely allied; inasmuch that it is difficult to draw up such specific characters as may effectually distinguish them, though they are in reality essentially distinct; differing greatly in their color and texture, and in the ramuli of the one being horizontal, jointed, and always simple, while those of the other are patent, and unjointed, and generally forked. *F. Lycopodium* too, from its stiff bristly texture, wholly wants the beautiful feathery appearance of *F. lycopodioides*. I feel persuaded also that its fruit will be found to be different, nor should I be willing to hazard any thing like a positive opinion to what family of Fuci it belongs. There is something in its texture much resembling the Zoophytes, and its general affinity to *Conserva spongiosa*, from which it scarcely differs, except in size, color, and texture, and in the bluntness of its ramuli, cannot fail of being observed.

a. <i>Fucus Lycopodium</i> , natural size.				
b. part of the stem, magnified	-	-	-	6.
c. horizontal section of the same	-	-	-	4.
d. part of a ramulus	-	-	-	2.



Fucus Lycopodium.

Fucus, fronde cartilagineâ, terete, filiformi, vage ramosâ, ramis simpliciusculis, totâ coopertâ ramulis horizontalibus, capillaceis, simplicibus, articulatis.

Fucus Lycopodium. Ner. Brit. p. 107. t. 17. (excl. synonymis omnibus.)

HABITAT in Mari Rubro. Vicecomes de Valent.—E. Zeylonâ accepit Linnæus.

Perennis?

RADIX callus explanatus, enormitèr discoideus, sordidè lutescens, diametro duarum triumve linearum.

FRONS teres, filiformis, subpalmaris, pennæ corvinæ crasitie, ad unius circitèr pollicis altitudinem indivisa assurgit, mox bifurca, segmentis erecto-patentibus, nunc fastigiatis, nunc hoc illo bis terve longiore; hæc quoque segmenta in his sunt indivisa et prorsùs simplicia, in illis bifurca, et sæpiùs apices versus obsita ramo uno alterove sparso, brevi, patente, vel erecto-patente, lenitèr incurvo: totam frondem a radice usque ad apices densissimè vestiunt ramuli horizontales, teretes, filiformes, simplices, crine vix crassiores, duas lineas longi, sub lente obsoletè articulati, dissepimentis pellucidis, articulis longitudine diametrum vix superantibus.

FRUCTIFICATIO hactenus latet.

COLOR sordidè dilutè fuscus, ad carneum accedens.

SUBSTANTIA cartilaginea, rigida, sub-cornea.

OBS. Planta corallinis exiguis et crustâ calcareâ sæpissimè obducta reperitur:—per desiccationem nequaquam adhæret chartæ.

Fucum hîc depictum optimè exprimit Stackhousii icon suprâ citata, quæ cùm pariter fidè exprimat exemplar in amicissimi Woodwardii herbario servatum creditumque ab ipso fuisse Yermuthæ in littoribus lectum, colligendum jure videtur hanc nostram stirpem debere Fucus Britannicis annumerari. Neque tamen, me judice, rectè aliquis censeret qui talem referret sententiam; e contrario enim persuasum mihi habeo virum cæteroquin accuratissimum esse humani aliquid in hoc passum, et, quod scimus omnes Botanici facilè posse accidere, commiscuisse cum nostratibus plantam ex oris longinquis missam. Quod si ita sit, forsân ejus *F. Lycopodii* specimen natum est in maris Mediterranei parte Ægypto proximâ, unde alias ille Algas submersas accepit, et in locis nequaquam longinquis utriusque exemplaria olim floruerunt. Sciens probè quanta sit in re Botanicâ confusio orta, quantumque scientia detrimentum cepit a nominum specificorum levî mutatione, et hinc forsitan nimis æquo cautus redditus, nomen primitùs huic Fuco a Stackhousio impositum mutare nolui, quamvis tantum ad illud *F. lycopodioidis* accedat, ut fieri possit ut errorum causa extet. Nec nomine solùm, sed facie quoque, hæ duæ stirpes sese invicem multùm referunt; ita ut difficile sit talem unius characterem specificum componere, qualis alterum quoque in se non capiet. Revera autem sunt distinctissimæ, nequaquam enim idem est ambobus color atque textura, et discrepant ramuli, qui in *F. Lycopodio* horizontales articulati et nunquam non simplices conspiciuntur, dum illi *F. lycopodioidis* patentibus sunt et uniformes et plerumque divisi. Efficit quoque illius textura rigidiuscula atque setacea ut prorsùs careat hujus facie elegantèr plumosâ; persuasumque insupèr mihi habeo *F. Lycopodium* esse præditum fructu absimilem illi *F. lycopodioidis*, quamvis absurdum foret si certè loqui ausim de re nondùm detectâ. Inest in *F. Lycopodii* facie aliquid quod indolem arguit ad Zoophytorum accedentem; ut ægrè aliquis pronunciaret ad quamnam Fucorum tribum rectissimè pertineat: sisteretur tamen proximus *Confervæ spongiosæ*, a quâ, si moles major colorque aliquantùm dissimilis nihili habeantur, vix certè distinguatur nisi per ramulorum apices obtusos.

a. <i>Fucus Lycopodium</i> , magn. nat.					
b. <i>caulis pars</i> , magn. auct.	-	-	-	-	6.
c. <i>idem horizontalitèr dissectus</i>	-	-	-	-	4.
d. <i>ramuli pars</i>	-	-	-	-	2.

Fucus Chemnitzia, stem cartilaginous, cylindrical, filiform, prostrate, creeping; branches erect, mostly simple, covered all over with peltate ramuli concave at the apex.

Fucus Chemnitzia. ESPER, *Ic. Fuc. I.* p. 127. t. 88. f. 1, 4, 5, 6.

Caulerpa Chemnitzia. LAMOUROUX, in *Journal de Botanique*. II. p. 144.

β . *peltatus*; ramuli rather remote, peltate.

Caulerpa peltata. LAMOUROUX, in *Journal de Botanique*. II. p. 145. t. 3. f. 2.

On the Malabar Coast. Dr. Esper.

Perennial.

ROOT, which I have not yet seen, formed, according to Esper, of a membranaceous base somewhat expanded and flattened.

FROND, furnished with a prostrate stem, (of the length of which and how far it is divided or not I am ignorant,) cylindrical, but becoming from drying irregularly longitudinally sulcated, and never afterwards recovering its original appearance, filiform, of the thickness of a crow's quill, throwing out branches from its upper side, (and, most probably, but of that I am by no means certain, fibres for the under,) in other respects naked; branches erect, standing close to each other, precisely like the stem except that they are not above half as thick, two or three inches long, some simple, others beset with a few scattered shorter ones standing in a direction between erect and patent, the whole of them from the base to the summit clothed on every side with loosely imbricated erecto-patent ramuli, a line or a line and half long, cylindrical and scarcely thicker than human hair, except at the apices, where they suddenly dilate into a small concave disk perforated in the center.

FRUCTIFICATION, at present undiscovered.

COLOR, most probably, a grass-green in the recent plant, but in Professor Esper's specimens, the only ones I have seen, a pale orange in the ramuli, and a blackish green in the stem and branches.

SUBSTANCE, cartilaginous inclining to horny in the stem, in the ramuli membranaceous and tough.

The variety β , differs in its smaller size, in its ramuli being disposed rather remotely, and in their shape so remarkably peltate, that according to Lamouroux, they might almost be compared to the leaves of *Tropæolum majus*. I have never seen it.

Obs. In drying it does not in the least change its appearance or adhere to paper.

In addition to what has already been said upon the subject of *F. Chemnitzia*, Professor Esper, who first published this species and to whom I am indebted for my specimens, has figured and described, what he considers as its barren state, slender shoots, covered with long branching subulate ramuli, arranged in the same manner as the tubiform ones, which he regards as the fructification. A variation so striking in a tribe of plants that seem to be liable to so little change in their form could not fail of appearing to every one extraordinary; and I am therefore in no wise surprised to read in the *Journal de Botanique* the * opinion of M. Lamouroux, that the learned Professor has fallen into an error, and figured as the same two distinct species of *Fucus*; misled, in all probability, by similarity of size and color, and by finding both growing from the same tuft of *Corallina Opuntia*. With this opinion I feel so little hesitation about coinciding, that I have omitted to refer to Esper's second and third figures, and, following the same idea, I am persuaded that what he has said of the root, describing it as a flat membranaceous base, is not really applicable to *F. Chemnitzia*, but that, as observed above, this species throws out, like its congeners, fibrous radicles from the under side of its creeping stem. The learned author is equally unfortunate in referring this plant to the family of *F. pedunculatus*; and the figure in the *Icones Fucorum* is wholly wrong as to the general habit of the species, the agreement of which with the other *Caulerpa* is sufficiently clear, though the color is so changed that it is difficult to imagine it ever could have been a bright grass-green. The place of *F. Chemnitzia* is evidently nearest to *F. clavifer*, from which it differs, essentially as I believe, in the shape of its ramuli. These in my specimens may, in point of form, not ill be compared to the shields of *Parmelia perforata* supported on long peduncles, but in Esper's figure they dilate more gradually like small trumpets. I can see no reason to suppose that the *Caulerpa peltata* of Lamouroux is more than a variety of *F. Chemnitzia*, and I have therefore quoted it as such above. The very ingenuous author himself admits that this may probably be the case, and that the difference he has observed between them may merely depend upon drying. Professor Esper named this *Fucus* after Mr. Chemnitz, by whom it was communicated to him from the East Indies, forming his name upon the model of Gmelin's *F. Bastera* and others, its supposed congeners. Lamouroux says he has seen it in many Herbaria, and suspects it is not an uncommon native of the Oriental seas.

a. *Fucus Chemnitzia*, natural size.

b. part of the frond, magnified - - - 6.

c. c. ramuli - - - - - 4.

* M. Lamouroux writes so positively on this head that I apprehend he must have had an opportunity of examining Dr. Esper's specimens.



Fucus Chemnitzia.



Fucus, caule cartilagineo, terete, filiformi, prostrato, repente; ramis erectis, simpliciusculis, ubique obtectis ramulis peltatis apice concavis.

Fucus Chemnitzia. ESPER, *Ic. Fuc. I.* p. 127. t. 88. f. 1, 4, 5, 6.

Caulerpa Chemnitzia. LAMOUROUX, in *Journal de Botanique*. II. p. 144.

β. *peltatus*; ramulis remotiusculis, peltatis.

Caulerpa peltata. LAMOUROUX, in *Journal de Botanique*. II. p. 145. t. 3. f. 2.

HABITAT in littoribus Malabaricis. *Esper*.

Perennis.

RADIX nondum a me visa.

FRONS caule instructa decumbente, (quantæ longitudinis et an divisus necne nescio) terete, sed per desiccationem vagè longitudinalitèr sulcato neque unquam postea in pristinam revocando figuram, filiformi, pennæ corvinæ crassitie, ramos e parte superiore, (radices fibrosas ex inferiore?) edente, cætera uudo; rami erecti, approximati, caulis prorsus similes, nisi quodd duplo sint tenuiores, bi- tri- pollicares, hi simplices, illi uno alterove brevi erecto patente sparsim obsiti, omnes a basi ad apicem undequaque vestiti ramulis laxiusculè imbricatis, erecto-patentibus, lineam vel sesquilineam longis, teretibus, capillo vix crassioribus, apicibus tamen subito dilatatis in discum exiguum, concavum, medio pertusum.

FRUCTIFICATIO nulla hactenus detecta.

COLOR, qui recentis verisimillimè fuit gramineus, in exemplaribus est Esperianis dilutè aurantiacus in ramulis, in caule et ramis nigro-viridis.

SUBSTANTIA caulis cartilagineo-cornea, ramulorum membranacea tenuis.

OBS. Exsiccata faciem nequaquam mutat, neque chartæ adhæret.

F. Chemnitzia descriptio suprâ data includit omne illud quicquid in hoc Fuco ipse vidi, quod quàm sit exiguum nemo me melius novit; cùm hactenus oblata sit occasio videndi nulla exemplaria præter id in hac tabulâ depictum, quod Esperii benevolentia debeo. Plura tamen de hoc Fuco refert illust. Professor, a quo præterea descripti delineatique sunt surculi tenues, cooperti ramulis elongatis subulatis, variè divisis, eâdem quâ tubiformes, ratione dispositis. Hos ergo pro sterilibus, illos habet pro fructiferis. Ut nihil verò dicam de fructificatione hujus familiæ nondum detectâ, fieri nequit quin tanta talisque partium mutatio præter naturam videretur in plantis, quæ vix ullam, unquam mutationem in ullo ætatis stadio subeunt. Libentèr ergò assentio Lamourouxio sententiam suam referenti, Esperum revera duas stirpes omninò diversas sub *F. Chemnitzia* nomine commiscuisse; deceptus forsan ambarum colore atque mole ferè eodem, et quodd ambas eidem *Corallinæ Opuntia* fasciculo ramis inter se mutuò implexis innatas viderit. Mirum sanè si et eadem utrique sit substantia. Hæc reputanti verisimillimum videtur Esperum non a vero *F. Chemnitzia* deprompsisse quod de radice perhibet, quam basin membranaceam dilatam dicit. Tabula quoque in *Iconibus Fucorum* habitum stirpis, quod aiunt, generalem crescendique modum non bene adumbrat, et procul dubio in errore versatur cl. auctor dum *F. Chemnitziam* ad Gmelini Fucorum ordinem tertium, *penicilliferos*, relegat; omnia enim testantur esse annumerandum *Caulerpis*, color licet prorsus deperditus nullas sui pristini viridis reliquias servet. In dispositione Fucorum locanda est species quam nunc tractamus proxima *F. clavigero*, ab hoc vix diversa nisi quodd ramulorum haud eadem sit figura. De hoc jam suprâ sub *F. clavigero* disseruimus. Illud modò hic monendum superest, ramulos *F. Chemnitzia* nostro in exemplare non malè referre *Parmelia perforata* scutellas petiolis teretibus insidentes; Esperiana verò icon sensim in modum tubæ dilatatos exhibet. *Caulerpa peltata* Lamourouxii, quatenus licet e tabulâ in *Diario botanico* datâ judicare, tantummodò *F. Chemnitzia* est varietas, et pro tali suprâ citavi, auctore ipso vir repugnante; fatetur enim vir, si quis alius, ingenuus fieri posse ut e merâ desiccatione pendeant discrimina quæ inter utrumque intercedere credidit. Titulum quem hæc stirps fert specificum indidit Esperus, honori consulens reverendi Dni Chemnitz, a quo missum accepit; in nomine effigendo secutus Gmelinum qui ita desinentia suis *Fucis penicilliferis* imposuit. Lamourouxius perhibet se vidisse hanc plantam in plurimis asservatam herbariis quamobrem suspicatur non infrequentèr reperi in mari Indico.

a. <i>Fucus Chemnitzia</i> , magn. nat.						
b. <i>frondis pars</i> , magn. auct.	-	-	-	-	-	6.
c. <i>c. ramuli</i>	-	-	-	-	-	4.

Fucus lineatus, frond membranaceous, flat, linear, midribbed for half its length, proliferous from the midrib, and irregularly bipinnate with scattered branches, the ultimate ones fimbriated with small teeth; whole frond striated with blackish parallel transverse lines.

On the coast of new Zealand. *Sir Joseph Banks*.

Annual?

ROOT, a very small callous disk.

FROND, four inches or more in length, rising with a subcylindrical stem about the thickness of a sparrow's quill at its base, whence it gradually grows more narrow and more thin, and wholly disappears near the middle of the height of the plant, after which the frond becomes completely flat and nerveless: this stem, which might perhaps with more propriety be called a midrib, as it merely performs the office of one, is throughout its whole length winged on both sides with a membrane not half a line wide, and everywhere linear, as are also the nerveless branches, which are nothing more than a continuation of the midribbed ones after the midrib itself has disappeared; the frond is once or twice irregularly forked, the segments beset with scattered nearly horizontal branches, more or less distant from each other, from half an inch to an inch long, all of them narrow at their base, then linear, and occasionally towards their apices producing other similar but smaller ones; the ultimate branches are constantly undivided, but regularly fringed from top to bottom with ramuli or teeth of the same nature and substance as themselves, standing close to each other in a direction between horizontal and patent, rather wide at their base, acuminate at their apices, scarcely half a line long, and very slightly incurved: similar branches also occasionally grow scattered from the midrib, as well towards the base as near the summit: the extremities of all are obtuse and rounded: the margins of such as are not regularly fimbriated are rough with broken teeth:—Near the root the midrib is generally left more or less naked by the action of the waves, and looks like a cylindrical stipes of a different substance from the rest of the frond.

FRUCTIFICATION, at present unknown.

COLOR, pink, with a slight tinge of purplish and brown, transparent, turning white from exposure to the sun.

SUBSTANCE, cartilaginous in the midrib, in the branches an exceedingly thin and tender membrane.

OBS. Under a microscope the whole frond is seen to be elegantly marked with extremely thin, horizontal, parallel blackish veins separated by very short intervals from each other:—in drying, the plant adheres slightly to paper.

Among the Fuci brought by Sir Joseph Banks from the South Seas, for which I am indebted to the liberality of that illustrious patron of science, I found a single specimen of this interesting species, the striated appearance of which at once distinguishes it from every other at present known, excepting only the variety of *F. cristatus* and the plant called by Draparnaud *F. striatus*. This singularity in its structure makes it look as if the whole frond was divided by actual dissepiments into a number of short joints, and renders the plant a curious link between the Fuci and Confervæ, as at present constituted. The appearance under the microscope is similar to that of the teeth of the peristomia of several mosses. In point of form, particularly in the ultimate branches, *F. lineatus* bears some degree of resemblance to *F. pristoides*, while the fimbriated margins, the texture and the size cause it to approach to *F. fimbriatus*; but from both these, as well as, I believe, from all others, it is almost needless to add that it is completely distinct.

- | | | | | | |
|---------------------------------------|---|---|---|---|----|
| a. <i>F. lineatus</i> , natural size. | | | | | |
| b. branch, magnified | - | - | - | - | 6. |
| c. part of the same | - | - | - | - | 4. |



Fucus lineatus.

Fucus, fronde membranaceâ, planâ, lineari, ad medium costatâ, e costâ proliferâ, et bipinnatim ramosâ, totâ lineis nigricantibus parallelis transversim striatâ; ramis sparsis, ultimis dentato-fimbriatis.

HABITAT Novæ Zelandiæ ad oras. D. J. Banks, Baronet.

Annua?

RADIX, callus discoideus, perpusillus.

FRONS, quadripollicaris et ultra, caule assurgens teretiusculo, basi pennæ ferè passerinæ crassitie, exinde sensim attenuato angustatoque, et circiter dimidiam plantæ altitudinem prorsus evanescente, ex quo frons plana fit, nervique est expers; caulis, costæ vice fungens, et forsitan rectius pro merâ costâ habendus, utrinque per totam longitudinem est obsitus membranâ haud semilineam latâ, ubique lineari, sicuti quoque sunt rami enerves, qui nihil sunt aliud nisi costati continuati, costâ jam deperditâ; frons enormiter divisa, ita tamen ut modò semel iterumve bifurcam diceret, segmentis sparsim obsitis ramis distichis, sub-horizontalibus, unguem pollicemve longis, his remotiusculis, illis approximatis, omnibus e basi angustatâ linearibus, qui sæpe, præsertim apices versus, aliis sunt obsiti brevioribus; ultimi nunquam non indivisi, sed per totam longitudinem utrinque fimbriati ramulis, vel dentibus, homogeneis, approximatis, horizontaliter patentibus, e basi latiusculâ acuminatis, vix semilineam longis, lenissimè incurvis: tales quoque rami hic illic e costâ oriuntur, non minùs prope basin quam juxta apices: apices omnibus obtusi: margines, quâ non certo ordine fimbriati, dentibus fractis asperi; costa prope radicem vi fluctuum denudata, vel tantummodò sparsim obsita reliquiis membranæ diffractæ, stipitem simulat teretem, indolis a reliquâ fronde diversæ.

FRUCTIFICATIO, nulla hucusque detecta.

COLOR, dilutè sanguineus, fusco et purpurascente aliquantùm perfusus, diaphanus, soli diu objectæ albicans.

SUBSTANTIA, cartilaginea in costâ, in ramis membranacea, tenuissima, et tenerrima.

Obs. Tota frons sub lente visa lineis horizontalibus, parallelis, nigricantibus angustissimis, spatio inter singulas brevissimo, elegantè depicta conspicitur:—per desiccationem chartæ leniter adhæret.

Fucos inter quos secum e maribus Australibus redux in Angliam attulit nobilissimus Banksius unicum reperire mihi contigit exemplar hujusce elegantis speciei, quæ per frondem planam tenuem pulcherrimè striatam illicò est ab omnibus dignoscenda, *F. cristati* var. γ et *F. striato* Draparnaudii exceptis, quorum crescendi modus omnimodis diversus. Striata hæc facies, non absimilis illi dentium peristomatis plerorumque muscorum, efficit ut stirps verè articulata videatur, talisque mereatur haberi unus ex annulis in Naturæ catenâ Fucos cum Confervis connectentibus. *F. lineatus* hic noster *F. pristoidem* ramorum ultimorum formâ et *F. fimbriatum* eorundem margine fimbriato, sicut etiam colore texturâ et mole, quodammodò refert, sed notis nimis certis ab utroque distinguitur ut locus sit ad timendum ne commisceantur.

a. <i>F. lineatus</i> , magn. nat.						
b. <i>ramus</i> , magn. auct.	-	-	-	-	-	6.
c. <i>ejusdem pars</i>	-	-	-	-	-	4.

Fucus fasciculatus, frond subgelatinous, cylindrical, filiform, much and irregularly branched; branches and ramuli scattered, clustered, obtuse.

Place of growth, unknown.

Annual?

ROOT, a small, callous disk.

FROND, cylindrical, rising with a *stem* four inches in height, filiform, of the thickness of a blackbird's quill, and undivided, but beset throughout its whole length with *branches* that grow in scattered clusters of three or four, or even more, together, with intervals between some clusters of almost half an inch, while between others there is scarcely a line, those towards the top of the stem standing most closely, so that the frond is there quite bushy: branches ranged in an irregularly spiral manner, horizontal, or even deflexed, varying in length from the half to two-thirds of an inch, altogether resembling the stem, except that they are not above half its thickness, beset in their turns with others much shorter, but of uncertain length, which are generally disposed in a clustered manner, though they are occasionally met with, solitary, and rather remote; these also sometimes produce a few, extremely short, scattered ramuli: the apices of all are obtuse, and somewhat incrassated: the younger branches are nearly clavate, and appear, under a high magnifier, to be slightly jointed.

FRUCTIFICATION, not yet discovered.

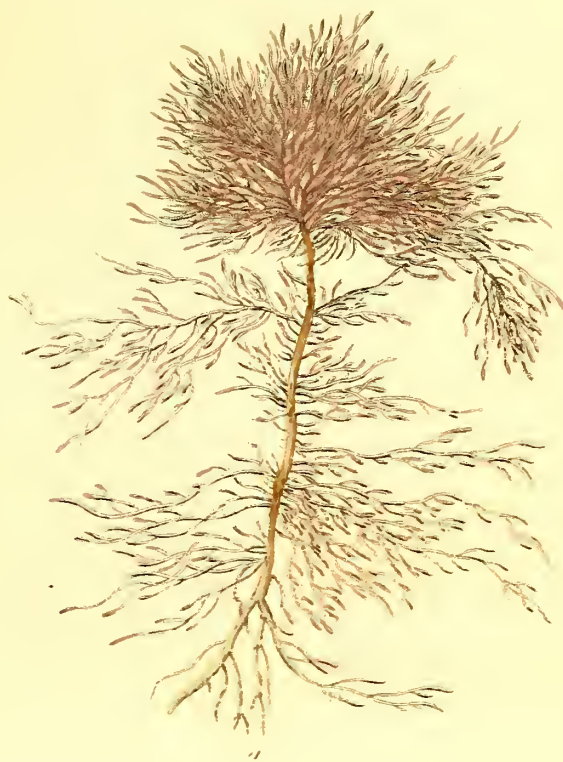
COLOR, a pleasant red, with a purplish tinge, nearly transparent.

SUBSTANCE, subgelatinous, tender.

OBS. In drying, it adheres closely to paper.

The color, the texture, and the whole general appearance of *F. fasciculatus* would immediately lead any one to pronounce, even upon the most cursory view, its place in the system to be nearest to *F. clavellosus* and *F. kalifornis*, and its affinity to be greater to these two plants than to any other at present described. From both these, however, it is without difficulty to be distinguished by its clustered mode of growth, equally removed from the nearly pinnated ramuli of the former, and from the subverticillate disposition of the branches in the latter. The jointed structure visible in the youngest shoots seems to indicate an affinity to *F. capillaris*, but this exists only in appearance; that plant being a true *Rivularia*, as I have been satisfied by specimens, and by a most beautiful drawing from Miss Hutchins, subsequently to its publication in this work. Of *F. fasciculatus* I have seen no other specimen than the one here represented, and whence this came, there are, unfortunately, no means of discovering, no memorandum being attached to any of the marine plants preserved in the Ellisian Herbarium.

- | | | | | | | |
|---|---|---|---|---|---|----|
| a. <i>F. fasciculatus</i> , natural size. | | | | | | |
| b. <i>branch</i> , magnified | - | - | - | - | - | 6. |
| c. <i>portion of the same</i> | - | - | - | - | - | 4. |
| d. <i>smaller part of the same</i> | - | - | - | - | - | 3. |



Fucus fasciculatus

Fucus, fronde subgelatinosâ, terete, filiformi, ramosissimâ : ramis ramulisque sparsis, hîc illis fasciculatis, obtusis.

HABITAT. - - - - - *Herb Ellis.*

Annua?

RADIX callus exiguus, discoideus.

FRONS teres, *caule* assurgens quadripollicari, Merulæ pennæ crassitie, filiformi, indiviso, sed per totam longitudinem obsito *ramis*, qui terni, quaterni, aut etiam plures hîc illic fasciculati oriuntur, intervallo inter hos fasciculos ferè unguiculari, inter illos vix unius lineæ, iis juxta caulis apicem confertissimis, ut frons ibi densè dumosa evadat : *rami* circa caulem ordine subspiralitèr alternò dispositi, horizontales, aut etiam deflexi, longitudine unguiculari vel sesquipollicari, caulis prorsùs similes, nisi quòd duplo sint tenuiores, ipsi obsiti aliis multo brevioribus, longitudinis tamen incertæ, qui nunc, et quidem plerumque, subfasciculati nascuntur, sed interdum solitarios et remotiusculos est videre ; hi quoque aliquandò ferunt unum alterumve brevissimum sparsum : apices omnibus obtusi et lenitèr incrassati : juniores subclavati, et hi sub lente obsoletè articulati conspiciuntur.

FRUCTIFICATIO nondum detecta.

COLOR amœnè ruber, purpurascente tinctus, subdiaphanus.

SUBSTANTIA subgelatinosa, tenera.

OBS. Per desiccationem chartæ arctè adhæret.

Animadversis *F. fasciculati* hujus nostri colore atque texturâ totâque denique facie, facilè ducetur aliquis ut mecum credat deberi illi sedem in systemate *F. clavelloso* et *F. kaliformi* proximam ; neque ullos dari *Fucos* quibuscum majorem jactare potest affinitatem quàm cum hisce. Quod quamvis ita sit, et quamvis hæ tres stirpes sese invicem multùm referant, nullus tamen datur dubitationi in distinguendis locus ; cum plantæ hîc depictæ frons densè dumosa crescendique modus ubique fasciculatus recedant paritèr a *F. clavelloso* ramulis sub-pinnatis ac ab iis *F. kaliformis* ordine enormitèr verticillato dispositis. Articulata ramorum facies, in junioribus conspicienda, videtur primo aspectu efficere ut hæc stirps sit potiùs *F. capillari* cognata ; sed res nequaquàm ita se habet ; quoniam *F. capillaris* omninò est *Rivulariis* associanda, de quo, plantâ illâ jamjam in hoc opere evulgatâ, certiozem me fecit amicissima D^{na}. Hutchins, missis exemplaribus plurimis unâ cum delineationibus accuratissimis comparatis sub lente ad exemplaria recentia. Nullum *F. fasciculati* hactenus mihi videre contigit specimen, præter illud in hac tabulâ depictum ; neque ulla nunc datur facultas dijudicandi quænam habitare solet littora, cum Ellisio mos fuerit ne minimam adjicere notulam scriptam Algis submersis in Herbario suo servatis.

a. <i>F. fasciculatus</i> , magn. nat.							
b. <i>ramus</i> , magn. auct.	-	-	-	-	-	-	6.
c. <i>ejusdem pars</i>	-	-	-	-	-	-	4.
d. <i>ejusdem frustulum</i>	-	-	-	-	-	-	3.

Fucus laxus, stem cartilaginous, lubricous, cylindrical, filiform, flexuose, loosely branched in a bipinnate manner; branches remote, horizontal, alternate, slightly incrassated at their apices: seeds scattered over the extremities of the branches.

Fucus laxus. BROWN, MSS.

At the Cape of Good Hope. Mr. Brown.

Annual?

ROOT, I have not yet seen.

FROND, cylindrical, filiform, of the thickness of a crow's quill, two feet in length, or perhaps much more, for I have never seen it entire, having a *stem* irregularly flexuose, once or twice dichotomous at uncertain distances, and beset with branches of the same nature and substance as itself, in other respects naked; *branches* scattered without order, so that there is an interval of two or three inches between some, and not of more than as many lines between others, exactly like the stem, except that they are somewhat more thin, half a foot or more long, variously flexuose or twisted, and irregularly dichotomous, in addition to which they are likewise, especially towards their apices, furnished with a few others, standing between horizontal and patent, arranged, like the primary ones, without order, about an inch long, and undivided, but bearing *ramuli* placed in a spirally alternate manner, from one to two or three lines long, horizontal, simple, and cylindrical, except that their apices, which are remarkably obtuse in the whole plant, are somewhat incrassated.

FRUCTIFICATION, at present unknown; unless, indeed, a few extremely minute scattered granules, which I saw near the apices of the branches, are really seeds, of which I have much doubt.

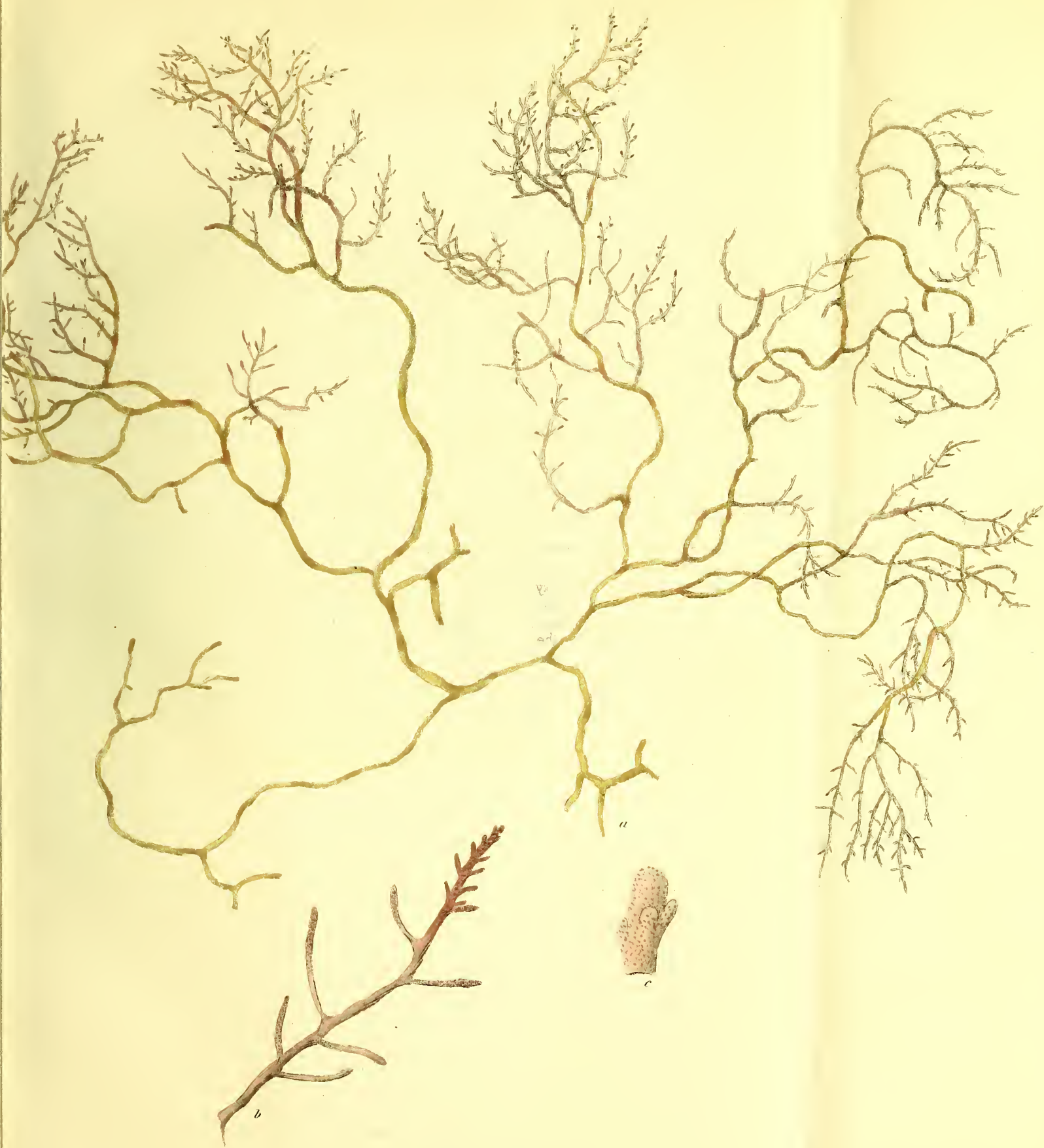
COLOR, a pale pink, with a purplish tinge, transparent; turning white from exposure to the sun, or from being long kept in fresh water.

SUBSTANCE, between membranaceous and cartilaginous, slippery, and full of moisture.

OBS. The habit of the plant is singularly loose and straggling:—in drying it adheres, though but slightly, to paper.

To the observation of every Botanist at all conversant with the study of the *submersed alga*, it cannot fail of repeatedly occurring, that in no tribe of plants is there an equal difficulty in determining the limits between species and varieties, occasioned, not so much by the striking diversity of form to which they are liable, for in this respect they yield to the Lichens, and perhaps to the Fungi, as by the impossibility of cultivating them, or even of watching their progress through the several periods of their existence with regularity upon their native rocks. Of this difficulty I have more than once had occasion to speak in the course of the present work; and, were I to mention it as often as it occurs, it would be necessary to do so very frequently. The present plant, however, seems particularly to call for some notice of it; the *Fucus* here represented being in many instances so nearly allied to *F. obtusus*, that possibly it is only a variety of that species, though I feel myself persuaded it is not so. In color, texture, and substance, they certainly agree, and the difference in size is by no means so great as occurs in the several varieties of many other species, but I am convinced, from an examination of a great number of specimens of *F. obtusus*, from almost every part of the world, that reliance may safely be placed upon the dissimilarity of their habit, and upon the branches of *F. laxus* growing remote and alternate, instead of being opposite and disposed in pairs or in threes. From all other species *F. laxus* is immediately distinguishable.

a. <i>Fucus laxus</i> , natural size.							
b. <i>branch</i> , magnified	-	-	-	-	-	-	6.
c. <i>apex of the same</i>	-	-	-	-	-	-	4.



Fucus lacus.

Fucus, fronde cartilagineâ, lubricâ, terete, filiformi, flexuosâ, laxè bipinnatim ramosâ; ramis remotis, horizontalibus alternis, apice lenitè incrassatis: seminibus ramorum ad apices sparsis.

Fucus laxus. BROWN, MSS.

HABITAT apud Caput Bonæ Spei. D. Brown.

Annua?

RADIX a me nunquam visa.

FRONS teres, filiformis, pennæ corvinæ crassitie, bipedalis, aut forsan multo longior, integram enim nunquam vidi, caule vagè flexuoso, hîc illic dichotomo, ramisque homogeneis obsito, cætera nudo; *rami* absque normâ sparsi, hî duorum triunive pollicum, illi vix totidem linearum intervallo sejuncti, caulis prorsus similes, nisi quòd sint aliquantùm tenuiores, semipedales, et ultrâ, variè flexuosi vel torti, vagè quoque dichotomi, atque insupèr, præsertim apices versus, laxè instructi aliis, horizontalitèr patentibus, paritèr absque normâ sparsis, subpollicaribus, indivisis, *ramulos* ferentibus spiralitèr alternos, remotiusculos, nunc unam nunc duas tresve lineas longos, horizontales, simplices, teretes, apicibus tamen, qui in omnibus ramis sunt obtusissimi, lenitèr incrassatis.

FRUCTIFICATIO hactenus latet; nisi quidem granula quædam minutissima, sparsa, quæ frondis juxta apices vidi, sint revera semina; de quo multùm dubito.

COLOR aquosè roseus, purpurascente perfusus, diaphanus, *Soli diu expositæ* aut in *aquâ dulci servatæ* tandem albescens.

SUBSTANTIA membranaceo-cartilaginea, lubrica, succosa, debilis.

Obs. Stirpis habitus insignitèr laxus atque diffusus:—per desiccationem adhæret, lenitèr tamen, chartæ.

Si, quod ad formæ mutationes attinet, *Algæ submersæ* cedant *Lichenibus Fungisve*, qui magis forsan quàm reliquæ omnes plantarum familiæ figurâ externâ ludere solent, nihilo tamen minus haud ita magna nobis sese objicit in his quàm in illis investigandis difficultas, quotiescunque species distinctas pro certo dignoscere pergimus, quærimusque definire terminos quos speciebus varietatibusque constituit Natura. Obstat scilicet elementum in quo nascuntur, prohibens ne hasce plantas ullo modo in hortis cultas servemus, aut etiam semper saxa natalia adire possimus, ut exploratum habeamus quomodo in diversis ætatis stadiis mutantur. Tale impedimentum jam plus unâ vice in hoc opere memoravi, et sub singulis ferè speciebus memorarem, si ita facerem quandocunque obvenit. Hoc certè non faciam; sed ille quem hîc tractamus. *Fucus* est talis qui cogit ut faterer inesse mihi scrupulos annon fieri possit ut sit tantummodo *F. obtusi* varietas. Favent huic sententiæ color textura atque substantia, nec, licet magnitudine sint impares, illud est inter utriusque molem discrimen, quin sæpe majus interesse videamus inter aliarum specierum varietates. Repugnat verò habitus, quod aiunt, generalis, atque insupèr quòd *F. laxus* ramis sit instructus remotis atque alternis, nequaquàm, illorum *F. obtusi* instar, oppositis et binis ternisve. His quosque differentiis eo magis inniti propendeo, quia vidi *F. obtusi* exemplaria in omnibus zonis lecta, quæ cuncta formam speciei propriam penitus servaverunt, crescendi modum pinnatum peripheriamque frondis subpyramidatam. A cunctis aliis *Fucis* hæc nostra stirps satis manifestè discrepat.

a. *Fucus laxus*, magn. nat.

b. *ramus*, magn. auct. - - - - - 6.

c. *ejusdem apex* - - - - - 4.

Fucus pygmæus, frond cartilaginous, compressed, dilated upwards, nerveless, dichotomous, at its extremities palmated with very short truncated segments: tubercles terminal, sessile, spherical, perforated at their tips.

Fucus pygmæus. *Fl. Scot.* II. p. 964. t. 32. (excellent.) *With.* IV. p. 100. *Syn. Fuc.* II. p. 258. *ESPER*, *Ik. Fuc.* II. p. 9. t. 116. *Eng. Bot.* XIX. t. 1332.

F. pumilus. *Fl. Ang.* p. 584. *ROTH*, *Cat. Bot.* II. p. 160? *ESPER*, *Ik. Fuc.* II. p. 9. t. 116.

F. lichenoides. *Linn. Trans.* III. p. 192.

Lichen saxatilis, *maritimus*, *muscosus*, *minimus*, *nigerrimus*, *MICHEL*, *Nov. Plant. Gen.* p. 103.

β. minor; form nearly cylindrical.

Stereocaulon confine. *ACH.* *Meth. Lich.* II. p. 317.

Lichen confinis. *ACH. Prodr. Lich.* p. 208. *Fl. Dan.* t. 879. f. 2.

On the shores of the British Isles, particularly in Dorsetshire, Devonshire, Cornwall, and Scotland, often covering large masses of rock, but only those which are left exposed except at high tide.—Coast of Norway.

D. Wahlenberg.—In Bantry Bay, with the variety *β*. *Miss Hutchins*.—*β*. at Warberg, in Sweden. *Dr. Wahlenberg*.—Dunbar, and other places in Scotland, not uncommon.

Perennial. Summer.

ROOT, none, except the base of the frond somewhat dilated, but without any change either in its color or texture.

FRONDS, numerous from the same base, growing in dense tufts, and frequently forming a thick velvety covering over whole rocks, so that seen at a distance they appear quite black, erect, about a quarter of an inch high, rather thick, compressed, scarcely more than the third or the fourth part of a line wide, some quite filiform, others slightly dilated upwards, all quite destitute of veins or midrib, and four or five times dichotomous, their segments between patent and divaricated, the upper ones so short that the frond is palmate towards the apex, or, rather, divided like a stag's horn: the barren apices are mostly emarginate, with extremely short obtuse segments, but are occasionally undivided, in which case the segments are so obtuse that they look as if truncated.

FRUCTIFICATION, very minute tubercles, either terminal upon the summits of the frond, or sessile on the sides near the summits, some solitary, others growing in clusters, all roundish, entire at their origin, but afterwards perforated at the tip with a small pore, which, as they grow older, dilates, and the tubercles assume the form of scutellæ: their internal substance, as far as I can distinguish by the aid of my microscope, is gelatinous, and completely uniform, with no appearance of either seeds or filaments.

COLOR, deep blackish green, with a glaucous tinge, paler near the summits: a deep black after it is dried.

SUBSTANCE, cartilaginous; flexible and tough, while moist; but turning rigid and brittle from drying.

The variety *β*. does not rise to more than half the height of *α*, and has its frond, which is twice as narrow, every where cylindrical and filiform: its tubercles, too, are elliptical: in other points they agree:—in the tubercles of this variety I have very plainly seen short jointed fibres.

If under the subject of the preceding plate an observation has been called for, upon the difficulty of distinguishing what is really to be regarded as a separate species among the submersed algæ, the plant here represented prompts another consideration, still more humiliating to our pride, and placing in a stronger light the nothingness of all our progress in science, by shewing how Nature sometimes defies our attempts to determine the genus or even the order of plants to which individuals belong. The Fuci have by different Botanists been regarded, and not unjustly, as passing over to the Lichens by means of *F. lichenoides* or *F. viscidus*; but the affinity of these two great families is far more strongly marked by the plant before us, which, as may be seen by the synonyms above quoted, has been alternately classed with the one and the other. It is far from my intention here to enter into the question of the difference between the submersed and the terrestrial algæ: such a discussion will come forward with more propriety in the general dissertation that I purpose prefixing to this work; by which time I trust I may have the additional advantage of availing myself of the information afforded by *Dr. Acharius' Lichenographia Universalis*, a book, which, though still unpublished, has been long in the press, and from which much light may be expected to be thrown upon the physiology and the real fruit of this family. At present it is sufficient to confine ourselves to the single individual we are treating of, which, conformably with my original intention, I have left among the Fuci, having there found it, though I am really much in doubt how far it properly belongs to them. Its place of growth is curiously intermediate; being never in the sea itself, and never so entirely removed from the water as to be out of the reach of high tides. Its habit is that of a *Collema*, or *Cornicularia*, or *Stereocaulon*; its fruit, externally, that of a *Fucus*; yet certainly opening from age in such a manner as to have the appearance of a *scutella*; while, internally, I can find neither the *theca* of the one genus nor the single seeds of the other. The variety *β*, both in color, size, and mode of growth, particularly resembles *Parmelia muscicola*. My friend, Professor Mertens, is of opinion that our *F. pygmæus* may possibly be the *F. capitatus* of Gmelin; but it appears to me that what that author says of the subulate branches and yellow color of his plant render such a supposition too improbable to warrant the admitting of it among the synonyms. It would also perhaps have been better to have left unnoticed *Dr. Roth's F. pumilus*; since the figure in the *Flora Danica*, upon which he seems almost altogether to depend, evidently belongs to *F. crispus*. I have nevertheless quoted him,



Fucus pygmaeus.



Fucus masculinifolius.

from his referring to Hudson. *F. pygmæus*, from the wide tufts in which it grows, is a plant little likely to pass unnoticed, and still less is it likely to be confounded with any other.

a. <i>F. pygmæus</i> , barren, natural size.			
b. part of the same, magnified	-	-	6.
c. frond, with fruit, natural size.			
d. part of the same, magnified	-	-	6.
e. tubercle	-	-	4.
f. another tubercle with an open apex	-	-	4.
g. section of the same	-	-	2.
h. tubercle discharging its contents	-	-	2.
i. i. var. β . natural size.			
k. k. the same, magnified	-	-	6.
l. tubercle	-	-	4.
m. section of the same	-	-	2.
n. n. contents of the tubercle	-	-	1.
o. jointed filaments	-	-	1.

204.—FUCUS PYGMÆUS.

Fucus, fronde cartilagineâ, compressâ, sursum versus dilatâ, enervi, dichotomâ, apice palmatâ, segmentis brevissimis, truncatis: tuberculis terminalibus, sessilibus, sphaericis, apice pertusis.

Fucus pygmæus. *Fl. Scot.* II. p. 964. *A.* 32. (*optimè*). *With.* IV. p. 100. *Syn. Fuc.* II. p. 258. *ESPER*, *Ic. Fuc.* II. p. 9. t. 116. *Eng. Bot.* XIX. t. 1332.

F. pumilus. *Fl. Ang.* p. 584. *ROTH*, *Cat. Bot.* II. p. 160? *ESPER*, *Ic. Fuc.* II. p. 9. t. 116.

F. lichenoides. *Linn. Trans.* III. p. 192.

Lichen saxatilis, maritimus, muscosus, minimus, nigerrimus. *MICHEL*, *Nov. Plant. Gen.* p. 103.

β . *minor*; fronde teretiusculâ.

Stereocaulon confine. *ACH.* *Meth. Lich.* II. p. 317.

Lichen confinis. *ACH.* *Prodr. Lich.* p. 208. *Fl. Dan.* t. 879. f. 2.

HABITAT Britanniarum ad oras, rupes non nisi pleno maris æstu irrigatas vestiens; præsertim in Scotiâ, Devoniâ, Dorsetiâ, et Cornubiâ.—Norvegicæ in littoribus. *D. Wahlenberg*.—In sinu “Bantry-bay” dicto, unâ cum var. β . *D^{na}. Hutchins.*— β . apud Warberg, Sueciæ. *D. Wahlenberg*.—Apud Dunbar et alibi in Scotiâ, haud infrequens.

Perennis. *Æstate*.

RADIX nulla, nisi frondis basis paullulùm explanata, colore texturâque nullo modo mutatis.

FRONDES ex eâdem basi plurimæ, densissimè cæspitosæ, rupes integras velamine crasso tegentes, ita ut eminùs conspectæ nigro maculatæ appareant, erectæ, circiter semiunguem altæ, crassiusculæ, compressæ, vix tertiam quartamve lineæ partem latæ, nunc prorsùs filiformes, nunc sursum versus aliquantùm dilatatæ, nervi venarumque expertes, dichotomiis quater pluriesve repetitis ramosæ, segmentis patentibus divaricatis, summis ita brevibus ut frons prope apicem subpalmata evadat, vel cervi cornuum divisuram æmulet; margines ubique integerrimi; apices steriles plerumque emarginati, segmentis brevissimis obtusis, interdùm indivisi et obtusissimi, quasi truncati.

FRUCTIFICATIO tubercula minutissima, nunc in ipsis frondis apicibus, nunc in fronde juxta apices sessilia, hæc solitaria, illa approximata, omnia subrotunda, primo ortu integra, mox apice pertusa poro perquàm exiguo, qui, progrediente ætate, dilatatur, et tubercula mutantur in formam scutellarum: substantia horum interna, quantum per lentes meas detegere licuit, gelatinosa est et prorsùs uniformis, neque semina neque filamenta ulla in se includens.

COLOR intensè nigro-viridis, glauco perfusus, apices versus dilutior; *exsiccatæ* nigerrimus.

SUBSTANTIA cartilaginea; *madore* lenta et tenax; *per desiccationem* rigida et fragilis.

VAR. β . vix ad dimidiam, quam α habet, altitudinem assurgit, fronde duplo tenuiore, ubique terete et filiformi: tuberculis quoque gaudet ellipticis: in cæteris conveniunt.—Hujusce varietatis in tuberculis filamenta sub lente acerrimâ vidi brevissima, simplicia, perquam manifestè articulata, quibusdam ex articulis solutis.

OBS. Desiccata chartæ non adhæret.

Necesse fuit de Fuco præcedente disserenti fateri quàm ægrè specierum singularum limites inter Algas submersas definiuntur, quod si non sit opus ut repetamus sub eo quem nunc tractamus Fuco, hic tamen magis forsân quàm alius quispiam dilucidè monstrat quàm paullùm adhuc scientia humana profecit, quàm in tenebris atque ambagibus omni-genis quotidie versamur, et quàm nostros omnes conatus irridet natura, dum summæ sapientiæ opera in nostra systemata, novorum Procrustium instar, cogere molimur. Non solùm enim negatur nobis pro certo dicere quid sit species et quid varietas; verùm etiam interdùm, sicuti in *F. pygmaeo* liquet, haud dignoscere valemus ubi plantarum genera aut ipsi ordines desinunt. Sic *Lichenes* atque *Fuci*, familiæ inter se plerumque satis discrepantes, cùm per *F. viscidum* et *F. lichenoidem* tùm per lichenes quosdam gelatinosos, sibi invicem accedunt, quod jamjam est a multis animadversum Botanicis. Nec tamen hi soli conjungunt; stat enim quasi inter utrosque intermedius *Fucus* hic noster *pygmæus*, nec facile esset dijudicare cuinam rectiùs associaretur. Testantur synonyma suprâ citata non deesse accuratos Naturæ scrutatores qui Lichenem et qui Fucum dixerunt; ut potiùs disceptandum videatur quæ certissima inter *Algas submersas* et *terrestres* intersit differentia. Sed nunc non est his locus; alius posthac dabitur, et forsân, priusquam eò pervenerimus, publici juris fiet Acharii optimi *Lichenographia universalis*, in quâ summus ille Botanicus de Lichenum fructu, indole, atque generibus copiosè disseret. Sufficit ut proposito nostro obsequentes relinquamus inter Fucos quod inter Fucos invenimus, et hîc *F. pygmæum* solum tractemus. Mirè igitur hæc stirps, uti jam diximus, inter Fucos Lichenesque ambigit; quod a loco natali, habitu atque fructu colligi potest. Nunquam rupes incolit, cæterorum more Fucorum, sub ipso mari positas, nunquam eas adedò ab Oceano remotas ut æstu fervente non proluantur. Formam faciemque habet *Collematis* vel *Corniculariæ* vel *Stereocauli*. Fructificatio extrinsecus visa est ea Fucorum globuliferorum; sed, ætate progrediente, sensim dehiscit, et fit quodammodò scutelliformis; dissecta neque Lichenum thecas neque Fucorum semina sparsa exhibet. Varietas β . colore, mole, et crescendi mole, *Parmeliæ muscicolæ* insignitè refert. Sententiam suam refert amicissimus Mertensius fieri posse ut *F. pygmæus* sit eadem illa species quam sub *F. capitati* nomine descripsit Gmelinus. Haud tamen idcirco hanc stirpem inter synonyma recipere sum ausus; cùm rami ejus subulati colorque flavus tali opinioni nimis repugnare videantur. Rectiùs quoque forsân fecissem, prætermittendo Rothii *F. pumilum*, in quo describendo maximè nititur *Floræ Danicæ* tabulâ, quæ unam ex *F. crispî* varietatibus exhibet. Ipse certè nequaquàm illum, nisi ille Hudsonum, citâsem. Non obstat *F. pygmaei* moles pusilla quominus statim in loco natali detegatur. Facile etiam a congeneribus dignoscitur.

a. <i>F. pygmæus, sterilis</i> , magn. nat.					
b. <i>ejusdem pars</i> , magn. auct.	-	-	-	-	6
c. <i>frons cum fructu</i> , magn. nat.					
d. <i>ejusdem pars</i> , magn. auct.	-	-	-	-	6
e. <i>tuberculum</i>	-	-	-	-	4
f. <i>aliud tuberculum apice dehiscens</i>	-	-	-	-	4
g. <i>tuberculum dissectum</i>	-	-	-	-	2
h. <i>idem, effundens quicquid in se habuit</i>	-	-	-	-	2
i. i. <i>var. β</i> , magn. nat.					
k. k. <i>eadem</i> , magn. auct.	-	-	-	-	6
l. <i>tuberculum</i>	-	-	-	-	4
m. <i>idem dissectum</i>	-	-	-	-	2
n. n. <i>quod fuit in tuberculo</i>	-	-	-	-	1
o. <i>fila articulata</i>	-	-	-	-	1

Fucus, caule coriaceo, plano, lineari, serrato-dentato, ramis horizontalibus ortu attenuatis abbreviatis simplicibus pinnato: foliis in ramis, distichis, patentibus, oblongo-lanceolatis, integerrimis: receptaculis cylindraceis, axillaribus, racemosis.

HABITAT in Novâ Zelandiâ. D. J. Banks, Baronet.

Perennis?

RADIX a me nondum visa.

FRONS instructa caule bi-tri-pedali (aut forsan multo longiore, neque enim apicem neque basin ullam ego hactenus vidi), plano, nervi venarumque experte, lineari, semiunguem circiter lato, stricto, et indiviso, sed margine utroque per totam longitudinem lenitè sinuato, intervallo inter singulos sinus ferè unguiculari; sinuum singulorum ex axillis, vel paullum supra sinus oriuntur rami, qui idcirco necessariò alterni distichique sunt, solitarii, caulis prorsus similes, nisi quòd duplo sint angustiores, horizontalitèr patuli, ortu attenuati et teretiusculi, sed ferè statim dilatati planique facti, atque exinde ad ipsum apicem, ubi obtusi desinunt, lineares, omnes eandem propemodum longitudinem, vix duorum triumve pollicum, servantes, omnesque indivisi, sed e marginibus, qui minùs evidentèr sunt sinuati quàm illi caulis, per totam longitudinem obsiti foliis eodem modo in ramis quo ipsi in caule dispositis, singulis intervallo bilineari sejunctis, lineari-lanceolatis, utrinque, sed maximè ad basin, attenuatis, pollicem longis, et sesquilineam latis, margine integerrimis, costæ venarumque verè expertibus, medio tamen aliquantùm incrassatis, ut nervum primo aspectu simulent.

FRUCTIFICATIO foliorum ad alas posita, e receptaculis constans cylindraceis, vix lineam longis, obtusis, brevissimè pedunculatis, racemosis, lenissimè hic illic torulosis, pertusisque poris minutissimis, sub quibus latent tubercula immersa, sphaerica, singula semen unicum subrotundum fuscum includentia.

COLOR recentis verisimillimè olivaceus; exsiccata ubique niger; rursus madefacta nigerrimus in caule et ramis, in foliis fuscus ad olivaceum accedens.

SUBSTANTIA caulis coriacea, ita dura ut sublignosa sit; foliorum cartilaginea.

OBS. Planta nitida, elegans, desiccata chartæ non adhæret.

Quum Hedwigius, Muscorum suo systemate jam ritè perfecto, illas species octodentatas quorum flores sunt axillares a *Grimmiis* hanc ob causam sejungendas jussit, novumque ex iis construxit genus quod *Pterigynandrum* appellavit, non fefellit acutissimum Sprengelium talè minùs aptum esse nomen, et hanc familiam rectiùs esse *Maschalocarpum* nuncupandam. Ipse igitur mox in suo de plantis cryptogamicis tractatu, *Pterigynandrum* Hedwigianum *Maschalocarpum* mutavit, et ego, viro summo libentèr obsequens, Fuco nondum descripto eidemque fructificatione foliorum ad alas sita maximè insigni, eundem imposui titulum. Data est jamjam alterius speciei in hoc opere icon, quæ propter similem receptaculorum dispositionem *F. axillaris* est nominata. Hæc quoque ad eandem Fucorum familiam ad quam *F. maschalocarpus* pertinet; sed receptacula *F. axillaris* sunt solitaria, color diversus, folia desunt. Nullus igitur in distinguendis labor, neque minùs certè facilèque dignoscitur ille quem nunc tractamus *Fucus* a reliquis omnibus, ut supervacaneum foret fusiùs de hoc dicere.

a. <i>F. maschalocarpus</i> , magn. nat.					
b. <i>rami pars</i> , magn. auct.	-	-	-	-	6
c. <i>receptacula</i>	-	-	-	-	4
d. <i>receptaculum horizontalitèr dissectum</i>	-	-	-	-	2
e. <i>semina</i>	-	-	-	-	1

Fucus maschalocarpus, stem coriaceous, flat, linear, toothed, pinnated with horizontal, short, simple branches, attenuated at their origin: leaves standing on the branches, distichous, patent, between oblong and lanceolate, quite entire: receptacles cylindrical, axillary, racemose.

In New Zealand. *Sir Joseph Banks*.

ROOT, I have not yet seen.

FROND, furnished with a *stem* two or three feet long (or perhaps much longer, for I have at present seen neither extremity of it), flat, destitute of veins or midrib, linear, about a quarter of an inch wide, straight, and undivided, but slightly sinuated at both the margins throughout their whole length, with an interval of nearly half an inch between every sinus: from the axilla of each contraction, or a little above it, originate the *branches*, which, being also solitary, are consequently alternate and distichous, flat, precisely resembling the stem, except that they are not more than half its width, between horizontal and patent, narrow and nearly cylindrical at their origin, but immediately becoming flat, and then continuing linear to their apices, where they terminate obtusely; all of them about two or three inches long, and all undivided, but at their margins, which are less evidently sinuated than those of the stem, beset from top to bottom with *leaves*, arranged in the same manner upon the branches, as the branches themselves are upon the stem; the form of these leaves is between linear and lanceolate, attenuated at both ends, but principally towards the base; their length is an inch; their width a line and half; and they are really devoid both of midrib and veins, though somewhat thickened in the centre so as to look as if provided with a midrib.

FRUCTIFICATION, situated at the axillæ of the leaves, consisting of cylindrical *receptacles*, scarcely a line long, obtuse, standing in racemi on very short peduncles, slightly torulose all over, and perforated with minute pores, under which lie imbedded spherical tubercles, each containing a single roundish brown seed.

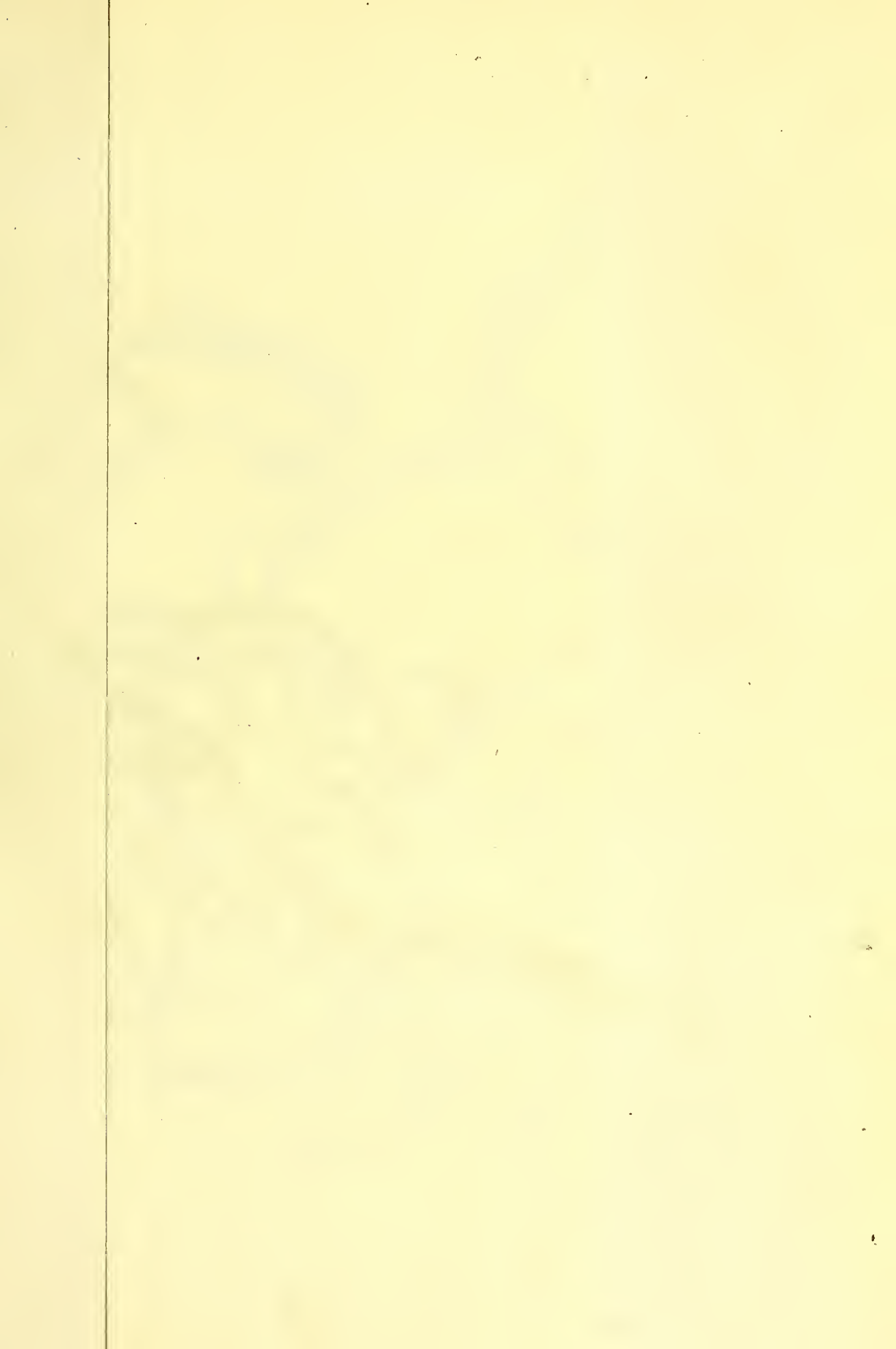
COLOR, most probably an olive-green in the plant when recent, but quite black after it is dried; when again moistened, an intense black in the stem and branches, but brown with an olivaceous tinge in the leaves.

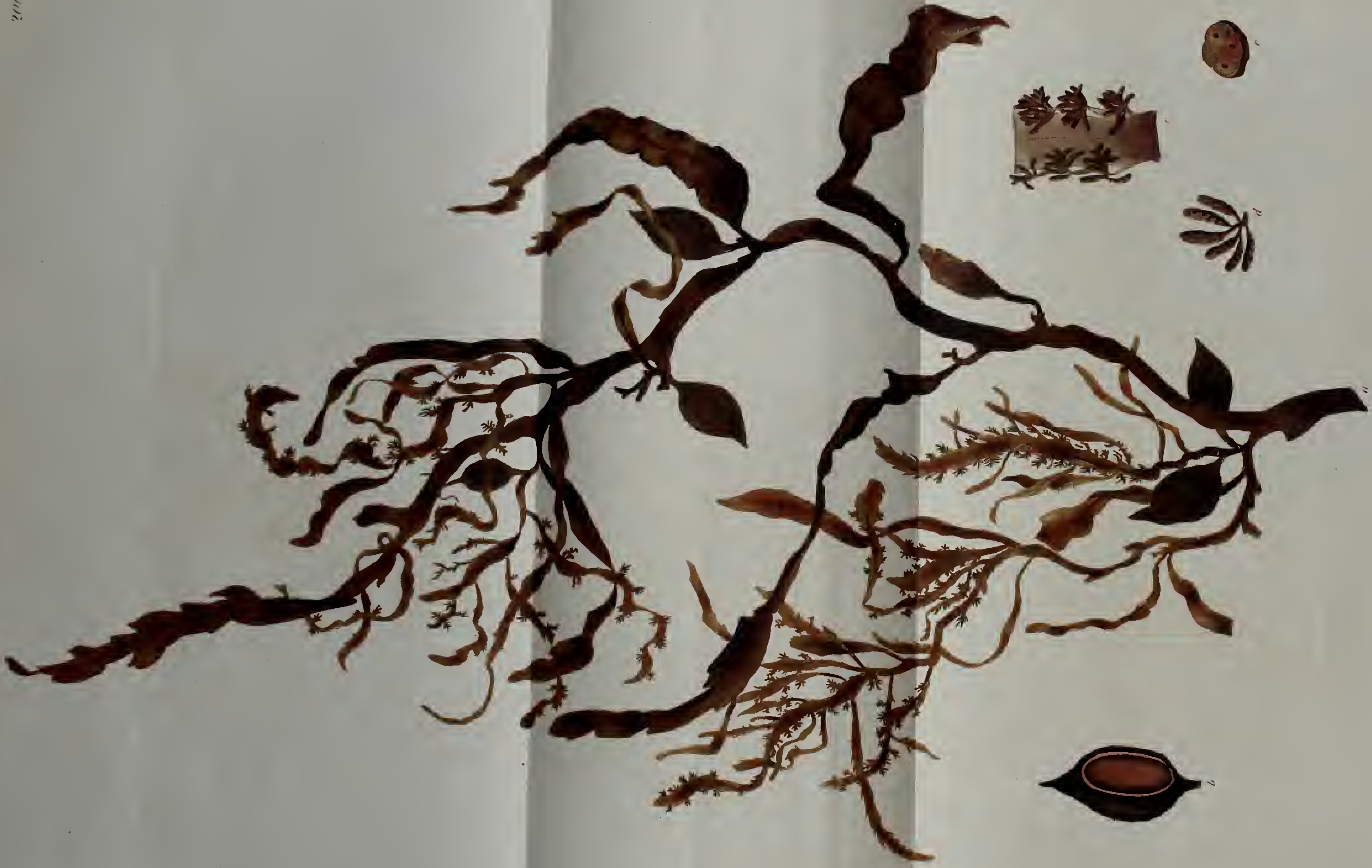
SUBSTANCE, of the stem coriaceous, and so hard as to incline to ligneous, of the leaves cartilaginous.

Obs. Whole plant glossy, and elegant in its appearance: in drying it does not adhere to paper.

It was well remarked by Dr. Sprengel, shortly after Dr. Hedwig published his new system of Mosses, that the genus, which from its axillary fruit he there called *Pterigynandrum*, should on that account rather have received the name of *Maschalocarpus*, a denomination which he himself afterwards gave it, and which I have therefore applied to the *Fucus* before us, the strong character of which is its bearing its fructification in small, nearly sessile, clusters at the axillæ of the leaves. Another species, allied to this, as of the same family, but very different, both in its color, the arrangement of its receptacles which stand solitary, and its want of leaves, has already been figured in this work, and from the similar situation of its fruit been called *F. axillaris*. Our *F. maschalocarpus*, however, is so truly and readily distinguishable, both from this and all others, that it is needless to offer any farther observations on the subject.

a. <i>F. maschalocarpus</i> , natural size.					
b. <i>part of a branch</i> , magnified	-	-	-	-	6
c. <i>cluster of receptacles</i> .	-	-	-	-	4
d. <i>section of a receptacle</i>	-	-	-	-	2
e. <i>seeds</i>	-	-	-	-	1





Fucus Phyllanthus.

W.J. H. Esq. del.

Fucus, caule coriaceo, plano, lineari, flexuoso, ramis sibi similibus, sub-horizontalibus, divisus vagè pinnato: vesiculis solitariis, ellipticis, utrinque acuminatis: foliis linearibus, integerrimis, serratisque; unico majore ramorum ad basin sterili; majoribus in ramis e margine proliferis fructiferisque: receptaculis cylindraceis, racemosis.

F. flexuosus. ESPER, *Ic. Fuc. II.* p. 48. t. 131.

HABITAT in Novâ Zelandiâ. *D. J. Banks, Baronet.*

Perennis.

RADIX a me nondùm visa.

FRONS instructa caule tri-quadri-pedali, aut forsàn multo longiore, integrum enim nondùm vidi, plano, ancipite, nervi venarumque experte, latitudinem ubique æqualem, duarum circitè linearum, a basi ad apices servante, flexuoso, indiviso, sed utrinque ramis obsito, cætera nudo; *rami* e caulis angulis acutis orti, distichi, alterni, spatiis subpollicaribus sejuncti, fragiles, et sæpe decidui, horizontales, aut deflexi, flexuosi, compressi potiùs quam plani, caule triplo quadruplove angustiores, plerique vix unguem longi, interdùm unus et alter tripollicaris, foliiferi vesiculiferique; *folia* in ramis alterna, disticha, intervallo inter singula brevissimo, horizontalia, plana, nervo lato obscuro vix nisi stirps luci obijciatur videndo percursa, tripollicaria, unguem ferè lata, linearia, basi in petiolum compressum brevissimum attenuata, apice rotundata, hæc integerrima, illa sparsim dentata, alia vagè hìc illuc incisa, quasi pinnatifida essent futura; quorundam e marginibus enascuntur folia aliquot longè minora, et substantiæ multò tenuioris, qualium etiam unum et alterum majoribus immixtum in ramis reperitur, haud sesquilineam lata, pollicem sesquipollicemve longa, margine ubique serrata, dentibus approximatis, decurrentibus; *vesicula* ramorum ad basin sita, una modò in singulis, ovata, apice breviter acuminata, hæc muticæ, illæ folio angusto brevi aristata, *Coryli Avellanae* nucum magnitudine, petiolis teretibus brevissimis fultæ, extrinsecus læves, intus cavæ et vacuæ:—ob ramos deciduos foliaque persistentia, caulis aliquaudò, ramorum loco, foliis modò pinnatus conspicitur, aliquandò ambo desunt.

FRUCTIFICATIO in foliis minoribus sita, dentium marginalium apicibus imposita, e *receptaculis* constans lineari-ellipticis, vix lineam longis, plurimis in racemum congestis, extrinsecus minutissimè torulosi, pertusisque poris, sub quibus latent tuberculâ immersa sphaerica, singula semen unicum subrotundum includentia.

COLOR quis fuerit in recente nescio, an olivaceus, an, sicut ille *F. dentati*; *exsiccatæ* niger est, *rursùs madefactæ* intensè fuscus.

SUBSTANTIA in caule ramisque coriacea; in foliis et vesiculis cartilaginea.

Obs. Planta insignitè flexuosa: per desiccationem nequaquàm adhæret chartæ.

Adeò usque discrepat *Fucus* in hac nostrâ depictus tabulâ a *F. flexuosi* icone Esperianâ ut nemo ferè suspicaretur Botanicus utramque revera eandem exhibere stirpem. Res autem, nisi magnoperè fallor, ita se habet; neque vertendum est vitio illust. Professore quoddam plantæ foliiferæ vesiculiferæque truncum modò denudatum delinearî curaverit; perfectiorem enim non habuit, neque ipse quum talia huic exemplaria misi meliora videram. Illa quoque quæ nob. Banksius postea mecum communicavit sunt multum læsa, prohibentque ne tam certè quàm vellem loqui ausim de stirpis perpulchræ indole crescendique modo. Una, uti mihi videtur, semper reperitur vesicula unumque folium ad singulorum ramorum principalium ortum; sed nequaquàm liquet an hæc folia progrediente ætate incrassata in novos ramos immutentur an putrescentia decidant. Rami atque folia ortu deflexi efficiunt ut *F. Phyllanthus* ad *F. retroflexi* familiam quodammodò accedere videatur. Maximam autem manifestè sibi vindicat cum *F. maschalocarpo* affinitatem, a quo, cum per multa alia, tum per vesiculas in illo nunquam conspiciendas, primo est aspectu dignoscendus. Hæc vesiculæ formâ et mole illas *F. comosi* referunt. Folia minora receptaculis utrinque obsita adeò similia sunt *Xylophyllæ falcatae* foliorum ut nomen inde ductum speciei imposuerim; *Xylophyllæ* enim generi, nomen *Phyllanthi* aptissimum primitus in suâ *Historiâ Jamaicensi* Brownius indidit.

- | | | | | |
|--|---|---|---|----|
| a. <i>F. Phyllanthus</i> , magn. nat. | | | | |
| b. <i>vesicula dissecta</i> . | | | | |
| c. <i>folii fructiferi pars</i> , magn. auct. | - | - | - | 6. |
| d. <i>receptacula</i> | - | - | - | 4. |
| e. <i>unum ex his horizontalitèr dissectum</i> | - | - | - | 2. |

Fucus Phyllanthus, stem coriaceous, flat, linear, flexuose, irregularly pinnated with branches like itself, nearly horizontal, and again divided: vesicles solitary, elliptical, acuminate at both ends: leaves linear, some entire, others serrated; one large and barren at the base of each branch; others smaller placed along the branches, proliferous and bearing fructification at their margins: receptacles cylindrical, racemose.

F. flexuosus. ESPER, *lc. Fuc.* II. p. 43. t. 131.

In New Zealand. *Sir Joseph Banks*.

Perennial.

Root, I have not yet seen.

FROND, arising with a stem three or four feet in length, or perhaps much longer, for I have never yet seen it entire, flat, two-edged, destitute of veins or midrib, preserving from top to bottom an everywhere equal width of about two lines, flexuose, undivided, but beset at both sides with branches, in other respects naked; branches originating from the sharp edges of the stem, distichous, alternate, separated each from the other by an interval of nearly an inch, brittle, and often deciduous, horizontal, or deflexed, flexuose, rather compressed than flat, not above a third or a fourth of the width of the stem, most of them scarcely half an inch long, but occasionally one or two extending to three inches, all producing leaves and vesicles; leaves standing alternate and distichous at short intervals upon the branches, horizontal, flat, having a wide, dark midrib scarcely discernible, except the plant is held to the light, three inches long, and almost half an inch wide, linear, their lower part attenuated into an extremely short compressed petiolus, their apex rounded, the margins of some entire, of others toothed without order, and again of others so cut as to look as if they were about to become pinnatifid; in some instances the margins are also proliferous, with a few much smaller and thinner leaves, and occasionally one or two like these latter grow mixed with the larger ones; their width does not exceed a line and half, or their length an inch or an inch and half, their margins are everywhere serrated with decurrent teeth standing close to each other; vesicles situated on the branches near their base, one only upon each, ovate, of the size of a hazel-nut, acuminate at their apices, and some of them ending in a short narrow leaf, all supported on very short cylindrical petioli, and smooth externally, internally hollow:—from the circumstance of the branches being deciduous, and the leaves more permanent, the stem is occasionally found pinnated with leaves alone, instead of branches, and sometimes both the one and the other are wanting.

FRUCTIFICATION, situated upon the tops of the serratures of the smaller leaves, consisting of lineari-elliptical receptacles, scarcely a line long, disposed in racemi, their surface minutely torulose, and perforated with pores, under which lie imbedded spherical tubercles, each containing a single roundish brown seed.

COLOR, black when dried, and turning to a dark brown from subsequent immersion: I am at a loss to tell whether in the recent plant it was olive, or resembled rather the hue of *F. dentatus*.

SUBSTANCE, coriaceous in the stem and branches; in the leaves and vesicles cartilaginous.

OBS. The plant is singularly flexuose; in drying, it does not in the least adhere to paper.

There are few botanists who, upon a comparison of the subject of the present plate with Dr. Esper's representation of his *F. flexuosus*, would be hardy enough to assert that they are both intended for the same species; and yet I am persuaded that this is really the case, and that the plant figured by the learned Professor is nothing more than our *F. Phyllanthus*, stripped of its leaves and vesicles. I am far from intending by such an observation to accuse my worthy correspondent of want of care in the creation of new species, or to throw any blame whatever upon him. Any botanist, however accurate, might easily have been deceived by such specimens as I then sent him, and I had never myself seen others. Even those, for which I have been subsequently indebted to the liberality of Sir Joseph Banks, one of which is here figured, have been far from perfect, and do not enable me by any means to speak with the certainty I wish as to the nature of the plant, which seems to bear one large leaf and one vesicle at the base of each leading branch; but how far these leaves ever change into new branches is a point that it is impossible to determine. The deflexed origin of the shoots gives *F. Phyllanthus* somewhat the appearance of being connected with the family of *F. retroflexus*. Its nearest affinity, however, is obviously with *F. maschalocarpus*, from which it is distinguished by many particulars, but above all by the presence of its vesicles, which in shape and size nearly resemble those of *F. comosus*. Its young leaves covered with fruit are exceedingly like those of *Xylophylla falcata*, when in flower, from which circumstance I have derived the specific name; the genus, *Xylophylla*, having originally been called by Brown, *Phyllanthus*.

a. *F. Phyllanthus*, natural size.

b. vesicle, cut open.

c. part of a leaf, magnified - - - - - 6

d. receptacles - - - - - 4

e. section of a receptacle - - - - - 2

Fucus, fronde cartilagineâ, terete, filiformi, ramosâ, ramis abbreviatis, sparsis, subhorizontalibus, totâ coopertâ ramulis setaceis, simplicibus, fasciculatis: capsulis fasciculatis, lineari-lanceolatis, incurvatis, ramulis immixtis.

HABITAT in freto, *Nootka Sound*, dicto. *D. Menzies*.

Perennis?

RADIX hactenus latet.

FRONS instructa *caule* terete, filiformi, pennæ corvinæ crassitie, dodrantali, indiviso, sed per totam longitudinem obsito ramis homogeneis, horizontaliter patentibus, subspiraliter alternis, his pollicem illis vix semiunguem longis, mediis plerumque longissimis, omnibus, sicut etiam est caulis, vestitis *ramulis* patentibus, fasciculatis, intervallo inter singulos fasciculos brevissimo, simplicibus, subulatis, vix setâ porcinâ crassioribus, duas tresve lineas longis:—fasciculata hæc ramulorum dispositio magis est manifesta in caulis parte superiore et in ramis quàm juxta caulis basin, ubi potius solitarii oriuntur et undequaque sunt imbricati, laxè tamen et ita ut caulis ubique transluceat.

FRUCTIFICATIO *capsulæ* fasciculatæ, sitæ ad basin ramulorum fasciculorum, quibuscum immixtæ nascuntur, hisque sunt triplo breviores tenuioresque, teretes, filiformes, inflexæ, intus per dissepimenta, ut videtur, distinctæ in loculos, qui singuli semen unicum fuscum sphaericum perpusillum includunt.

COLOR, qui in *exsiccata* est nigerrimus, fit in *rursus madefactâ* nigro-badius.

SUBSTANTIA cartilaginea, lenta, tenax.

Obs. Exsiccata faciem vix mutat, et chartæ paullulùm adhæret.

Si tibi, amice lector, *Rothii Catalecta Botanica*, opus sanè optimum dignissimumque quod legatur relegaturque, sæpe inter manus versentur, vix dubium est quin, cum intuearis *Fucum* in hâc tabulâ depictum, in mentem tibi veniat icon illius, quem ille *Thunbergio* dicavit, utpote qui habitu, mole, colore, crescendique modo quamplurimum cum hoc nostro *F. Larice* convenit. Hæc autem omnis similitudo in rebus minoris momenti est posita; ut alia enim taceam, penitus desunt *F. Larici* vesiculæ illæ puliciformes in *F. Thunbergii* maximè notabiles, et dissimillimus est utriusque fructus. Nequaquàm igitur fieri potest ut, quum *Algæ* submersæ, systemate emendato, demùm in nova disperientur genera, his duabus liceret stirpibus juxta se stare; sed relegabitur *F. Larix* ad eandem tribum quæ *F. lycopodioidem* etiam in se includet; huic enim speciei naturâ est multum affinis, sed longè magis affinis *F. floccoso* nostro, quocum, ut verum fatear, ita convenit ut scrupuli mihi restent annon sint rectius pro meris varietatibus quàm pro distinctis speciebus habendæ. Aliter tamen censuit amicissimus *Menziesius*, vir acerrimi in re botanicâ judicii, et qui adhuc solus inter Botanicos utrumque horum *Fucorum* in loco suo natali legit. Suadent insuper esse pro diversis habendos crescendi modus in utroque dissimilis, et frons *F. floccosi* in ramis præcipuis denudata in minimis compressa, quæ contra *F. Laricis* rami omnes ramulis setaceis sunt obsiti omnesque sunt ad amussim pariter teretes. Neque, si mox per Botanicorum posteriorum observationes edoctus has stirpes conjungere cogerer, me idcirco pœniteret quòd ambas hîc delineatas exhibuerim; nullo enim modo nisi per icones plurimas fieri potest ut demùm perveniamus ad cognitionem plantarum, quæ cum in diversis ætatis stadiis formis diversissimis ludere sint solitæ, tum propter situm in Oceani fundo natalem semet rarè et vix nisi fortuitò oculis nostris conspiciendas obijciunt.

a. <i>F. Larix</i> , magn. nat.					
b. <i>rami pars</i> , magn. auct.	-	-	-	-	6.
c. <i>ejusdem portio</i>	-	-	-	-	4.
d. <i>capsulæ</i>	-	-	-	-	2.

Fucus Larix, frond cartilaginous, cylindrical, filiform, branched, covered all over with setaceous, simple, clustered ramuli; branches short, scattered, nearly horizontal: capsules lineari-lanceolate, incurved, growing in clusters mixed with the ramuli.

In Nootka Sound. *Mr. Menzies*.

Perennial?

ROOT, at present unknown.

FROND, rising with a cylindrical, filiform stem, of the thickness of a crow's quill, nine or ten inches long, undivided, but beset from top to bottom with branches of the same nature and substance as itself, horizontal, disposed in an irregularly spiral alternate manner, some an inch, others scarcely three lines long, the middle ones in general the longest, all, like the stem, beset with patent ramuli growing in small clusters with a very short interval between each cluster, simple, subulate, two or three lines long, and scarcely thicker than hog's bristles:—this clustered arrangement of the ramuli is more evident in the branches and towards the upper part of the stem than near the base, where they rather grow solitary and are imbricated on all sides, but so loosely that the stem is everywhere seen through them.

FRUCTIFICATION, capsules clustered like the ramuli, at the base of which they grow, intermixed with them, but three times as thin and as short as they, cylindrical, filiform, incurved, divided internally by apparent dissepiments into a series of distinct cells, each containing a single very small brown spherical seed.

COLOR, an intense black when dry, but turning, from subsequent immersion, to a deep brown.

SUBSTANCE, cartilaginous, flexible, tough.

Obs. In drying, it scarcely changes its appearance, and adheres, though very slightly, to paper.

The habit, the size, the color, and in a great measure the mode of growth of the plant before us will all serve to recall Dr. Roth's *Fucus Thunbergii*, especially to the memory of such of my readers as are acquainted with the figure in the *Catalecta Botanica*; and yet, similar as the two plants are in all these respects, they are not only essentially distinct, but must even at a future time be referred to distinct genera. It is scarcely necessary to observe that, when such a division of the Marine Algæ shall take place, *F. Larix* will be carried to the same family as *F. Lycopodioides*, near to which it will require a place, but still by far more near to *F. floccosus*, of which I should not be surprised if it should hereafter prove to be merely a variety, though I have thought it best here to regard them as distinct, as well in deference to the opinion of my excellent friend, by whom both were discovered, as because of their dissimilar mode of growth, and also because the frond of the one, quite naked in its main branches, and compressed even in its smallest ones, seems to be essentially different from that of the other everywhere clothed with setaceous ramuli, and everywhere cylindrical. Nor, if it should hereafter appear that I am mistaken, should I regret the having here published them both; because I regard it as tending to throw the greatest light upon the study of the Fuci, that plants which are liable to variations so extraordinary, and of which we have so few opportunities of judging, should be illustrated by figures of their various stages.

a. <i>F. Larix</i> , natural size.				
b. part of a branch, magnified	-	-	-	6.
c. portion of the same	-	-	-	4.
d. capsules	-	-	-	2.



Pinus Larix.

Fucus, fronde planâ, cartilagineo-membranaceâ, medium versus dilatâ, ramosissimâ; ramis vagè pinnatis ramulis abbreviatis, horizontalibus, simplicibus, acuminatis: capsulis sphæricis, solitariis, in medio ramulorum immersis.

Fucus Teedii. ROTH, *Cat. Bot.* III. p. 108. t. 4.

HABITAT Lusitaniæ in oris, prope Olyssopolin. *Teede*.

Annua?

RADIX, teste Rothio, basis exigua, scutata, coriaceo-membranacea.

FRONS, quæ longitudine est tri-quadri pollicari, ad dimidiam ferè altitudinem teretiuscula vel compressa, et vix pennâ passerinâ crassior, mox sensim dilatatur, et, plana facta, formam capit linearem aut lineari-lanceolatam, æquatque latitudine lineam sesquilineamve, semper nervo venisque destituta, tunc summitates versus rursus angustatur, et in apices desinit longè acuminatos: frons, quâ compressa, est plerumque indivisa, sursum versus absque normâ scinditur in segmenta aliquot patenti-divaricata, longitudinis perquàm incertæ, et talia quoque ordine subpinnato disponuntur in frondis parte inferiore horizontalia sparsaque, omnia, uti suprâ memoratur, formæ lineari-lanceolatæ, atque omnia per totam longitudinem utrinque obsita ciliis homogeneis, sterilibus subulatis, capsuliferis lanceolatis, planis, horizontalibus, spatio inter singulos brevissimo, longitudine in his haud semilineæ in illis duarum linearum, pleraque indivisa, sed interdum unum alterumve vagè bifurcum est videre.

FRUCTIFICATIO capsulæ exiguæ, sphæricæ, in ipsâ ciliorum lateralium substantiâ immersæ, medium plerumque occupantes, una modò, vel rarissimè duæ in singulis, intus foventes congeriem seminum minutissimorum, lætè purpurascantium, oblongorum.

COLOR dilutè fuscus, semidiaphanus, livido, vel hîc illîc purpurascente, perfusus.

SUBSTANTIA cartilagineo-membranacea, lenta, mollis.

Obs. Per desiccationem chartæ aliquantùm adhæret; et, si nimis prematur, fit absque normâ et secùs quàm Natura ert dilatata.

Quam pluries jam in hoc opere laudavi iterùm mihi se laudandam præbet benevolentia Mertensii, qui amicissimè de more exemplar Fuci in hâc tabulâ depicti, unicum illud quod hactenus vidi, mecum communicavit. Eidem quoque debetur icon ejusdem perpulchra in *Catalectis Botanicis* sculpta. Hanc ille adumbravit obsequens suo Rothio, qui primus et quantum reperio solus adhuc inter auctores hanc stirpem memoravit, nomine imposito quod inventoris memoriam servaret. Affinitatem quæ inter *F. Teedii* et *F. gigartinum* interest bene notat Rothius, qui tamen mirè hallucinatur, dum pro uno eodemque ferè præcipuo in distinguendis caractere memorat illius capsulas aristâ suffultas hujusce verò nudas. Res autem, ut mihi videtur, est huic contraria; sicut enim jamjam sub *F. gigartino* memoratur, bene de illâ specie dixit Linnæus "capsulas aristâ subjacente (aut potius ramulo, ut ita dicam, aristiformi), esse terminales;" sed nihil unquam tale in *F. Teedii*, nisi exsiccato, occurrit; hujus enim fructus nequaquàm est ramulorum lateralium abbreviatorum ad margines sessilis, sed in ipsâ horum substantiâ innatus, qualiter fere in *F. purpurascente*, hoc tamen terete, illo compresso, accidere solet. Reliquæ illæ quas memoravit Rothius dissimilitudines, pendentes a substantiâ *F. Teedii* membranaceâ et a fronde planâ juxta medium expansâ, omnes ad hunc Fucum à *F. gigartino* separandum valent, dignæque sunt quas proferret clarissimus Floræ Germanicæ Auctor. Quod ad me attinet, nequaquàm is sum qui audactè sententiam proferre velim de Fuco cujus unum modò exemplar vidi, nec unquam nisi diffidentissimè a Rothio dissentirem: necesse tamen est ut fatear videri mihi *F. Teedii* magis accedere ad quasdam e *F. ciliati* varietates angustiores quàm ad *F. gigartinum*; et, nisi obstaret color, qui magni est in Algis dignoscendis ponderis, verisimile crederem fieri posse ut a tyrone incautove commiscerentur specimina utriusque sterilia.

a. <i>F. Teedii</i> , magn. nat.					
b. <i>ramus</i> , magn. auct.	-	-	-	-	6.
c. <i>capsula</i>	-	-	-	-	5.
d. <i>eadem dissecta</i>	-	-	-	-	4.
e. <i>semina</i>	-	-	-	-	1.

Fucus Teedii, frond flat, between cartilaginous and membranaceous, dilated towards the middle, irregularly branched; branches pinnated with short, scattered, horizontal, simple, acuminate ramuli: capsules spherical, solitary, imbedded in the centre of the ramuli.

Fucus Teedii. ROTH, *Cat. Bot.* III. p. 138. t. 4.

On the Coast of Portugal, near Lisbon. *Mr. Teede*.

Annual?

ROOT, according to Dr. Roth, a small discoid base, of a substance between coriaceous and membranaceous.

FROND, three or four inches long, rising to about half its height nearly cylindrical or compressed, and scarcely thicker than a sparrow's quill, then gradually widening, till, being quite flat, it takes a linear or lineari-lanceolate form, always being destitute of midrib or veins, and again near the apices grows narrow, and ends in a long acuminate point: the frond, in its compressed part, is mostly undivided, but towards the summit is irregularly cleft into a few patent or divaricated segments of uncertain length, and similar ones to these are also scattered about the sides of the lower part of the frond, standing horizontally and making it take something of a pinnated appearance; all of them, as above mentioned, are of a lineari-lanceolate shape, and all from top to bottom fringed on both sides with *cilia* of the same nature and substance as themselves, subulate when barren, lanceolate if in fruit, flat, horizontal, separated by very short intervals, some not half a line, others two lines long, most of them undivided, but occasionally one or two irregularly forked.

FRUCTIFICATION, small spherical *capsules*, imbedded in the substance of the marginal *cilia*, generally near their centre, one, or, rarely, two in each, containing a mass of extremely minute, bright purplish, oblong seeds.

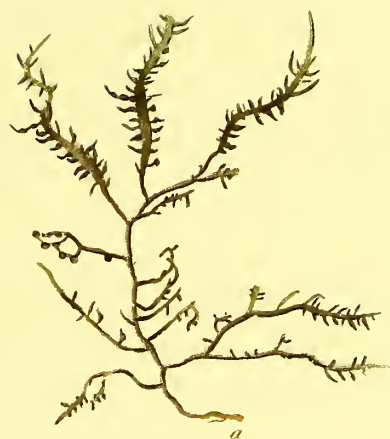
COLOR, pale brown, semitransparent, with a livid, and, in places, a purplish tinge.

SUBSTANCE, between cartilaginous and membranaceous, soft and flexible.

Obs. In drying, it adheres slightly to paper, and, if too much pressure is used, becomes unnaturally and irregularly dilated.

For the specimen here figured, the only one I have at present seen of this elegant little *Fucus*, I am indebted to Professor Mertens, by whom the drawing of this plant was made for Dr. Roth's *Collectanea*, in which work it was first published, nor do I find that it has at present been noticed in any other. Its specific name was given it in honor of Mr. Teede who found it. Dr. Roth has well remarked upon the affinity of this plant to *F. gigartinus*; but he is singularly unfortunate in one of the leading characters of distinction which he points out between them, that the capsules of *F. Teedii* are subtended by an awn-like shoot, while those of the other are naked; whereas, on the contrary, as has been already remarked on the former of these plants, the character of the subtended capsule, originally dwelt upon by Linnæus, is in reality characteristic of the species, but the fruit of *F. Teedii* never has such an appearance, except in drying; its capsules being by no means sessile upon the sides of the short lateral branches, but rather imbedded in the centre of their substance, almost as in *F. purpurascens*. The other differences noticed by Roth, depending upon the membranous substance of the plant before us, the flatness of its frond, and its expansion towards the centre, all accord with the usual acuteness of the author of the *Flora Germanica*. For myself, I must acknowledge that of a plant, of which I have seen so little, I can have scarcely better means of judging than my readers; but I am inclined to suspect it is most nearly allied to some of the varieties of *F. ciliatus*; and, were it not for the color, which I have no doubt is constant in both, I should not wonder if specimens of the two plants in a barren state were occasionally to come so near, as to render it difficult to distinguish between them.

a. <i>F. Teedii</i> , natural size.					
b. <i>branch</i> , magnified	-	-	-	-	6.
c. <i>capsule</i>	-	-	-	-	5.
d. <i>section of the same</i>	-	-	-	-	4.
e. <i>seeds</i>	-	-	-	-	1.



Fucus Feedii.

Fucus, caule lignoso, compresso, utrinque obsito ramis cartilagineis, elongatis, variè divisis, inferioribus nudis, summis sparsim obsitis ramulis simplicibus, setaceis, erecto-patentibus: vesiculis subrotundis, sub-solitariis, innatis: receptaculis cylindraceis, ad ramorum apices sitis.

Fucus fibrosus. *Fl. Ang.* p. 575. *With.* IV. p. 87. *Linn. Trans.* III. p. 137. *Ner. Brit.* p. 80. t. 14. *Syn. Fuc.* I. p. 93. *Fl. Fr. Ed. 2da.* II. p. 23. *Eng. Bot.* XXVIII. t. 1969.

F. setaceus. *Fl. Ang.* p. 575.

F. abrotanoides. *Gmelin, Hist. Fuc.* p. 89. *Esper, Ic. Fuc.* I. p. 65. t. 29. et t. 29. A. *Linn. Syst. Nat. Ed. Gmel.* II. p. 1382.

F. baccatus. *Gmelin, Hist. Fuc.* p. 90. t. 3. f. 2. *Esper, Ic. Fuc.* I. p. 108. t. 54. *Syst. Nat. Ed. Gmel.* II. p. 1382. *Schmidel, Iter.* p. 78. t. 1.

Fucus abrotanoides vesiculis parvis rotundis ornatus. *Moris. Hist. Ox.* III. p. 648. s. 15. t. 8. f. 17.

Fucus radicibus arborum fibrosis similis. *Raii Syn.* p. 49. n. 45.

HABITAT in Meridionalibus et Occidentalibus Angliæ oris.—In sinu, *Galway Bay*, in Hiberniâ. *D. Scott.*—In sinu, *Bantry Bay*. *Dna. Hutchins.*—Inter rejectamenta maris prope Yarmouth, rarissimè.—Inter rejectamenta maris apud Dieppam. *Schmidel.* In Guianæ oris. *Aublet, in Herb. Banks.*

Perennis. Feb.—Aug.

RADIX *callus expansus, discoideus, lignosus, nigricans.

FRONS tripedalis, et ultrâ, caule assurgens unico, plerumque indiviso, dodrantali pedalive, erecto, stricto, terete, basi pennâ crassiore olorinâ, exinde sensim sed lenissimè attenuato, atque juxta apicem anserinæ crassitiem vix superante, utrinque per totam longitudinem ramis vagè obsito, distichis, alternis, ortu horizontaliter patulis, spatio aliquot linearum inter singulos, inferioribus plerumque et sæpe multis e superioribus ætate vel vi fluctuum diffractis, ita tamen ut pars cujuscunque unguem fere longa persistat, faciatque ut videatur caulis quasi tuberibus asper, reliquis pedalibus, bipedalibus, aut etiam longioribus, teretibus, basi aliquantùm incrassatis, mox merulæ pennæ crassitiæ et filiformibus, caulis instar indivisis nudisque, nisi quòd ipsi sint à basi ad apices obsiti serie minorum ordine subspiraliter alterno dispositorum, intervallis sejuntorum brevissimis, ut toti sit stirpi facies insignitè dumosa, erecto-patentium, horum pedem longorum, illorum vix pollicem, inferiorum plerumque longissimorum, reliquorum sensim apices versus abbreviatorum, omnium indivisorum, ferentiumque ramulos, vesiculas et fructum, interdùmque etiam tertiam seriem ramorum, qui pennâ haud crassiores passerinâ et vix unguem longi, remotiusculi sunt subdistichique, et sæpissimè fructu per totam longitudinem vestiti, non sine ramulis; ramuli, (folia forsân rectiùs dicendi) in summis modò ramis conspiciendi, et in his magis quàm in illis copiosi, singuli lineæ unius intervallo sejuncti, ipsos frondis ad apices frequentissimi, setacei, plani, erecto-patentes, plerique circiter sesquilineam longi et simplices, alii unguem longi atque bifurci, aut etiam dichotomi et quasi semet in ramos producturi; vesiculæ, ramulorum instar, in summis modò ramis obviæ, ellipticæ, vel formæ ex ellipticâ sphericæ, *Viciæ sativæ* seminum magnitudine, in ipsâ frondis substantiâ innatæ, nunc solitariæ et perraræ, nunc in quolibet ferè ramo inveniendæ, et non rarò tres quatuorve in singulis, hæ remotiusculæ, illæ concatenatim approximatæ, ramo uno alteroque è lateribus orto sæpe armatæ, et fronde ulterius progrediente nunquam non coronatæ, extrinsecus læves, intus cavæ et vacuæ. Frondis ad basin interdùm, sed neuti-quàm semper, reperiuntur aliquot folia lineari-lanceolata, plana, unguem longa et vix semilineam lata, indivisa, integerrima, nervoque tenuissimo percursa: horum quoque unum atque alterum aliquandò est in ramis superioribus obvium.

FRUCTIFICATIO in ramis juxta apices præsertim ultra vesiculas sita, interdùm illos per pollicis sesquipollicisve longitudinem cooperiens, formâ tamen horum vix idcirco mutata, nisi quòd receptacula facti crassiores fiant, e tuber-culis constans exiguis, granulatis, sphericis, approximatis, immersis, singulis poro extrinsecus pertusis minutissimo, intusque soventibus semina aliquot elliptica, fusca, limbo pellucido cincta, unâ cum granulis plurimis, albicantibus, diaphanis, seminibus multoties minoribus.

COLOR ex flavesciente olivaceus; *exsiccatæ* nigerrimus, et nunquam rursus ullâ arte in pristinum revocandus.

SUBSTANTIA caulis ad lignosam accedens; reliquæ frondis coriacea; *totius exsiccatæ* rigida atque fragilis.

Obs. Planta lævissima, formâ sæpiùs subpyramidatâ, maguam plerumque fert Zoophytorum minorum messem, et solus, nisi fallor, præter *F. siliculosum*, inter Fucos Britannicos *Sertulariâ Plumâ* obsitus reperitur:—caulis pars inferior crustâ spongiosâ haud infrequentè obducitur:—formâ multùm ludit:—per desiccationem ad dimidiam ferè magnitudinem contrahitur:—surculorum juniorem apices non rarò involuti reperiuntur.

Conspiciuntur haud rarò quæ inter se insignitè discrepant diversa *F. fibrosi* exemplaria, hæc ramulis setaceis ubique ferè densè vestita, illa ramis maximâ ex parte denudatis; hæc sine vesiculis, illa tam copiosè vesiculifera ut rami ultimi ex his modò constare videantur atque etiam moniliformes evadant; foliorum quoque major minorve est

* Radicem fibrosam in cone suâ tribuit huic stirpi Morisonus; sed hoc satis liquidò ex errore factum.

messis; et formâ quamplurimùm ludunt vesiculæ, nunc sphæricæ, nunc ellipticæ, et nunc lanceolatæ; unde fit ut non mediocris in synonymiâ confusio inter auctores sit orta, et ut plantam in duas species dispertiverit Gmelinus. Icon, quam ille *Fuci* sui *baccati* tradidit, specimèn sistit vetustum et vi maris læsum, quod nihil in se fibrosi setaceive servat. Nec magis *fibrosi* nomen meretur stirps Schmideliana, de quâ ut confidenter loquar permisit b. Schreberus, qui specimina ab ipso Schmidelio lecta mecum communicavit. Schmidelius autem, cùm caulem, quod mihi etiam sæpe videre contigit, crustâ spongiosâ obductum repperit, hinc ductus est ut suum *Fucum* è regno Vegetabili excludendum et ad Animale adjiciendum censeret. Cui etiam annuit Stackhousius, et rem, quod maximè miror, communi Botanicorum assensu firmatam autumare videtur. Est et altera in Nereide Britannicâ de *F. fibroso* sententia, quæ mihi minùs arridet; nempe quòd ramuli setacei, quibus hic *Fucus* suum nomen debet, nihil sint aliud nisi folia linearia latiuscula marginibus involutis. Ut alia autem taceam, nonne huic opinioni satis repugnant hæc costata illa prorsus enervia? Observandum est de foliis, hæc in *F. fibroso* non videri ad eundem esse finem a Naturâ comparata, cui in congeneribus liquidò inserviunt; non enim sunt tantummodò ramorum rudimenta, sed formam, quantum ego vidi, semper servant, semperque indivisa manent; et tantum ab est ut primos modò plantæ surculos subministrent, ut non nisi in adultâ perfectâque viderim. Observationibus post *Synopsin Fucorum* habitis edoctus utramque varietatem ibi descriptam hic delevi. Primam, scilicet *Fucum* quem apud Falmouth legeram et de quo semper dubius hæseram, ad alium potiùs quempiam *Fucum* pertinere suadet D^{na}. Griffiths: altera, quamvis primo aspectu satis diversa, adeò tamen per gradus conjungitur usitati *F. fibrosi* faciei, ut characterem per quem distinguam non reperiò. De Hudsoni *F. setaceo* certiores nos faciunt Goodenovius atque Woodwardius esse *F. fibrosum* in statu maximè tenui delicato. De *F. fibroso* et congeneribus optimè dicit Gmelinus; “pulcherrimum *F. baccatus* exemplum sistit quomodò transeat Natura de uno *Fuco* in alterum, et quomodò omnes sint inter se conjuncti. Cum illo scilicet *Myrica* “*Fucusque faniculaceus* vesiculis conveniunt pedunculatis et ex parte fissis. Ille se jungit *Abieti*, quòd ramos “quoque gerat concatenatis instructos. Hæc jungitur *Fuco nodoso* iisdem, eumque quasi in compendio exprimit, ut “adeò ab hoc series habeatur usque ad *faniculaceum*. Incipit *nodosus* magnitudine giganteâ. Sequitur *Abies*. “*Siliquosus* cum *Abiete* maximè affinis interponitur. Jungit utrumque *Fucum* et cum se et cum *faniculaceo baccatus*, frondes peculiares proprias sibi habens, illique accedunt *F. Sargasso*, *F. acinarius*, et *F. heteroclitus*, cum “*lendigero* et *salicifolio*, quos hanc ob causam hic immisceo.”

a. <i>F. fibrosus</i> , magn. nat.					
b. <i>frondis apex</i> , cum fructu, absque vesiculis, magn. auct.					6.
c. <i>apex vesiculiferus fructiferusque</i>	-	-	-	-	6.
d. <i>vesiculæ et recepticula</i>	-	-	-	-	4.
e. <i>receptaculum horizontalitèr dissectum</i>	-	-	-	-	3.
f. <i>semina et granula pellucida</i>	-	-	-	-	1.



Lucina fibrosa.

Pl. J. H. F. 1841

Fucus fibrosus, stem woody, compressed, beset on both sides with long, cartilaginous, variously divided branches; the lower ones naked, the upper ones furnished with setaceous, simple, erecto-patent ramuli: vesicles roundish, mostly solitary, innate: receptacles cylindrical, placed at the ends of the branches.

Fucus fibrosus. *Fl. Ang.* p. 575. *With.* IV. p. 87. *Linn. Trans.* III. p. 137. *Ner. Brit.* p. 80. t. 14. *Syn. Fuc.* I. p. 93. *Fl. Fr. Ed. 2da.* II. p. 23. *Eng. Bot.* XXVIII. t. 1969.

F. setaceus. *Fl. Ang.* p. 575.

F. abrotanoides. *Gmelin, Hist. Fuc.* p. 89. *Esper, Ic. Fuc.* I. p. 65. t. 29, and t. 29. A. *Linn. Syst. Nat. Ed. Gmel.* II. p. 1382.

F. baccatus. *Gmelin, Hist. Fuc.* p. 90. t. 3. f. 2. *Esper, Ic. Fuc.* I. p. 108. t. 54. *Syst. Nat. Ed. Gmel.* II. p. 1382. *Schmidel, Iter.* p. 78. t. 1.

Fucus abrotanoides vesiculis parvis rotundis ornatus. *Moris. Hist. Ox.* III. p. 648. s. 15. t. 8. f. 17.

Fucus radicibus arborum fibrosis similis. *Raii Syn.* p. 49. n. 45.

On the southern and western coasts of England.—Galway Bay in Ireland. *Dr. Scott.*—Bantry Bay. *Miss Hutchins.*—On the Yarmouth Beach, extremely rare.—Among the rejectamenta of the sea at Dieppe. *Schmidel.*—Coast of Guiana. *Aublet, in the Banksian Herbarium.*

Perennial. February—August.

ROOT, an expanded,* disciform, blackish, woody base.

FROND, three feet and more long, rising with a single, mostly undivided *stem*, from nine to twelve inches in length, erect, straight, cylindrical, thicker than a swan's quill at its base, whence it is gradually but almost imperceptibly attenuated, so that at its apex it is about the size of a goose-quill; throughout its whole length it is on both sides irregularly beset with a series of distichous alternate *branches*, separated from each other by intervals of a few lines, at their origin between horizontal and patent; in general several of the lower and occasionally some of the upper ones are broken off by age or by the force of the waves, yet so that a portion of each nearly half an inch long still remains, and causes the stem to appear rough with a number of knobs; the rest of the branches extend to the length of a foot or two feet or even more; at their base they are slightly swollen, but soon acquire the size of a blackbird's quill, after which they continue nearly filiform, and are, like the stem, undivided and naked, except indeed that from top to bottom they are lined with a set of smaller ones arranged alternately in a subspiral manner at very short intervals, so that the appearance of the whole plant is singularly bushy; they are erecto-patent, some of them a foot, others scarcely an inch long, the lowest mostly the longest, and the rest growing regularly shorter as they approach the summit of the frond, all of them undivided, and all producing ramuli, vesicles, and fruit; occasionally also they are furnished with a third series of branches, which are distichous and rather remote, not thicker than a sparrow's quill, about half an inch long, and most commonly clothed all over with ramuli and fruit: the *ramuli* (or perhaps they might more properly be called *leaves*) are situated only in the upper branches, on some of which they are more plentiful than on others; but always most abundant at the very extremities; they are setaceous, flat, erecto-patent, most of them about a line and half long and simple, others thrice that length and forked, or even dichotomous and appearing as if about to change into new branches: the *vesicles*, which, like the ramuli, are only to be met with on the highest branches, are either elliptical, or between elliptical and spherical, or occasionally almost lanceolate, of the size of the seeds of the common vetch, innate in the centre of the substance of the frond, in some cases solitary and very rare, in others to be seen on almost every branch, and occasionally two or three upon a branch, placed either at short distances, or near to one another like the beads of a necklace; not uncommonly one or two very short branches grow out of their sides, and they are constantly tipped with the ends of the frond projecting beyond them; externally they are smooth, internally hollow and empty. It often, but by no means constantly, happens that the base of the frond produces a few lineari-lanceolate, flat, undivided leaves, quite entire at their margin, and provided with a thin elevated midrib: sometimes also one or two of these is to be found mixed with the upper branches.

FRUCTIFICATION, seated upon the branches near their tips, especially beyond the vesicles, and in some cases covering them for the length of an inch or an inch and half, yet without causing them to undergo any change of form, except that they become thicker and somewhat more irregular in their surface; they then contain imbedded in their substance a quantity of small, granulated, spherical tubercles, placed close to each other, each of them externally perforated with a very minute pore, under which lie a few elliptical brown seeds surrounded with a pellucid limbus, and a number of whitish transparent granules many times smaller than the seeds.

COLOR, olive-green with a tinge of yellow, turning to an intense black when dry, and never after to be restored to its original hue by subsequent moistening.

SUBSTANCE, approaching to ligneous in the stem, in the rest of the frond coriaceous; rigid and brittle after it is dried.

* Morison has figured the plant with a fibrous root, which is clearly an error.

Obs. The whole surface of the frond is remarkably smooth:—its general outline, when floating in water, approaches to a pyramidal shape:—a great quantity of the smaller zoophytes are commonly found upon its branches, particularly *Sertularia Pluma*, which, I believe, is never to be seen upon any other British *Fucus*, except *F. siliquosus*:—the stem is usually covered by a spongy incrustation:—its form is very variable:—in drying it shrinks to half its natural size:—the ends of the young shoots are usually found involuted in a very remarkable and curious manner.

The different appearances assumed by different specimens of *F. fibrosus*, from the branches of some being wholly covered with ramuli while those of others are almost altogether naked, or from some individuals having their ultimate shoots little more than strings of concatenated vesicles, while in others there is scarcely a vesicle to be seen, or, again, from the shape of these vesicles, which varies remarkably from spherical to lanceolate, has been the cause of its having been divided by Gmelin into two species, and of much confusion having consequently occurred in the synonymy. The figure given by this able botanist of his *F. baccatus* is interesting, as shewing a singularly battered state of the plant, and Schmidel's figure is still more remarkable. Both of these are undoubtedly intended to represent the present species; though Schmidel, who found the stem, as I have often seen it, coated with the beginning of some sponge or flustra, was thence led to suspect that his plant might belong to the animal kingdom, and Mr. Stackhouse has suffered himself to adopt the same opinion, and even to speak on the subject with a degree of confidence, considering it as a point sufficiently established. There is also, with all due deference to the author of the *Nereis Britannica*, another observation in his work which does not appear to me to be made with my friend's usual accuracy, when he represents the setaceous ramuli as being nothing more than the linear leaves with their edges rolled in; a thing that can scarcely be the case, considering that the former have no vestige of a midrib, which in the latter is sufficiently conspicuous. It is also deserving of remark concerning these leaves, that they appear to differ from what is observable in those of the congeners of *F. fibrosus*, not being the mere rudiments of branches, but always, as far as my observations go, continuing undivided, and only being to be found in perfect and full grown specimens, instead of constituting the first shoots of the plant. I have been induced by observations made subsequently to the publication of the *Synopsis Fucorum* to consider it best no longer to preserve either of the varieties there enumerated; what I had gathered at Falmouth and reckoned the first of them belonging, according to Mrs. Griffiths, to some different species, and the second being united to the common appearances of the plant by such imperceptible gradations that it is impossible to find a character for it. Mr. Hudson's *F. setaceus* is, according to Dr. Goodenough and Mr. Woodward, nothing more than this *Fucus* in its fine and delicate state. Gmelin, in his second note on *F. baccatus*, furnishes us with a very just and pleasing account of the steps that nature appears to have followed among *F. fibrosus* and its congeners. It is a singular coincidence that he should describe it as a very rare plant, only once gathered by Pallas near the Hague; and that at Yarmouth, which is nearly opposite, it should never have been found, except during the winter of 1798, and then only very sparingly.

- | | |
|--|----|
| a. <i>F. fibrosus</i> , natural size. | |
| b. apex of the frond in fruit, without vesicles, magnified | 6. |
| c. apex with vesicle in fruit | 6. |
| d. vesicle and fruit | 4. |
| e. horizontal section of fruit | 3. |
| f. seeds and pellucid granules | 1. |

Fucus, caule coriaceo, plano, ancipite, pinnato ramis alternis, brevissimis; foliis linearibus, dentatis, brevissimè petiolatis: vesiculis ellipticis, gemellis, petiolatis; petiolis bifurcis, planis.

HABITAT - - - - - *D. Brodie.*

Perennis.

RADIX hactenus latet.

FRONS instructa *caule*, (qui quantæ sit longitudinis et an divisus necne nescio) plano, ancipite, flexuoso, latitudinem circiter semilineæ ubique æqualem servans, ramis obsito, cætera nudo; *rami* alterni, patentes, spatiis subpollicaribus sejuncti, caulibus prorsus similes, nisi quodd triplo sint angustiores, indivisi, vix lineam unam alteramve longi, foliiferi vesiculiferique; *folia* raro plura quam duo vel tria in singulis ramis, alterna, linearia, duos et ultrà pollices longa, et vix totidem lineas lata, basi in petiolum brevissimum attenuata, apice lenitè angustata attamen rotundata, margine repando-dentata, dentibus remotis exiguis, nervo tenui nigricante percursa; *vesiculæ* ellipticæ, aut elliptico-sphæricæ, *Lathyri odorati* seminum ferè magnitudine, foliorum ad alas ortæ, duæ in singulis ramis, gemellæ, petiolo bi-trilineari plano bifurco sursum versus aliquantùm dilatato impositæ, apice nonnunquam, sed rarè, aristatæ folio reliquorum simili sed minore, extrinsecus læves, intus cavæ et vacuæ.

FRUCTIFICATIO nulla hucusque detecta.

COLOR in *caule ramisque* nigricans; in *vesiculis et foliis* pulchrè gramineus, fuscello tamen perfusus, subdiaphanus.

SUBSTANTIA *caulis* coriacea, *foliorum vesicularumque* cartilagineo-membranacea tenuis atque tenera.

Obs. Interdùm accidit unum e foliis esse divisum, quasi bifurcum, segmentis quoad magnitudinem inæqualibus.

Inest in Fuci hîc depicti foliis peculiare quiddam, cùm quoad substantiam tùm quoad colorem, quod, quamvis vix verbis capi potest, nihilo tamen minus in plantâ dignoscendâ multùm valet, efficitque quodd iis qui semel exemplar viderint nullus postea sit in distinguendâ labor. Vesiculæ quoque ellipticæ per paria approximatae characterem speciei firmum eundemque utilissimum ministrant. Folia, ut mihi videtur, non ita malè referunt ea *Theæ viridis*, quæ postquàm aquâ infusa sunt et macerata, iterùm sunt exsiccata; aut etiam possunt graminibus flaccidis componi. Hanc ob causam Fuco nomen specificum *graminifolium* imposui. Nihil de historiâ aut de loco stirpis natali compertum habeo.

a. *F. graminifolius*, magn. nat.

b. *vesiculæ*, magn. auct. - - - - - 6.

Fucus graminifolius, stem coriaceous, flat, two-edged, pinnated with exceedingly short, alternate branches : leaves linear, toothed, on very short petioles : vesicles elliptical, in pairs, on forked footstalks.

SENT from - - - - - by M. Brodie.

Perennial.

ROOT, at present unknown.

FROND, furnished with a *stem*, of the length of which and how far it is divided or not I am ignorant; flat, sharp at the edges, flexuose, preserving everywhere an equal width of about half a line, beset with branches, but in other respects naked; *branches* alternate, patent, arranged at intervals of nearly an inch each, exactly like the stem, except that they are not a third of its width, undivided, only a few lines long, but bearing both leaves and vesicles; *leaves* seldom above two or three on a branch, alternate, linear, two inches or more in length, furnished with a thin blackish midrib, attenuated at their base into an extremely short petiolus, their apex slightly narrowed but still rounded, their margins repando-dentate, with small remote teeth; *vesicles* elliptical, or between elliptical and spherical, of the size of the seeds of the Sweet Pea, originating from the axillæ of the leaves, growing two on each branch and in pairs, being supported on a common petiolus two or three lines long, flat, forked near the base, and slightly dilated in its upper part; the vesicles have their apex occasionally but not commonly tipped with a leaf similar to the rest but smaller; they are smooth externally, but hollow within.

FRUCTIFICATION, none yet discovered.

COLOR, blackish in the stem and branches, in the leaves and vesicles of a light grass-green with a brownish tinge, nearly transparent.

SUBSTANCE, coriaceous in the stem, but in the leaves and vesicles between cartilaginous and membranaceous, thin and tender.

OBS. It now and then happens that one of the leaves is divided into two segments of unequal size.

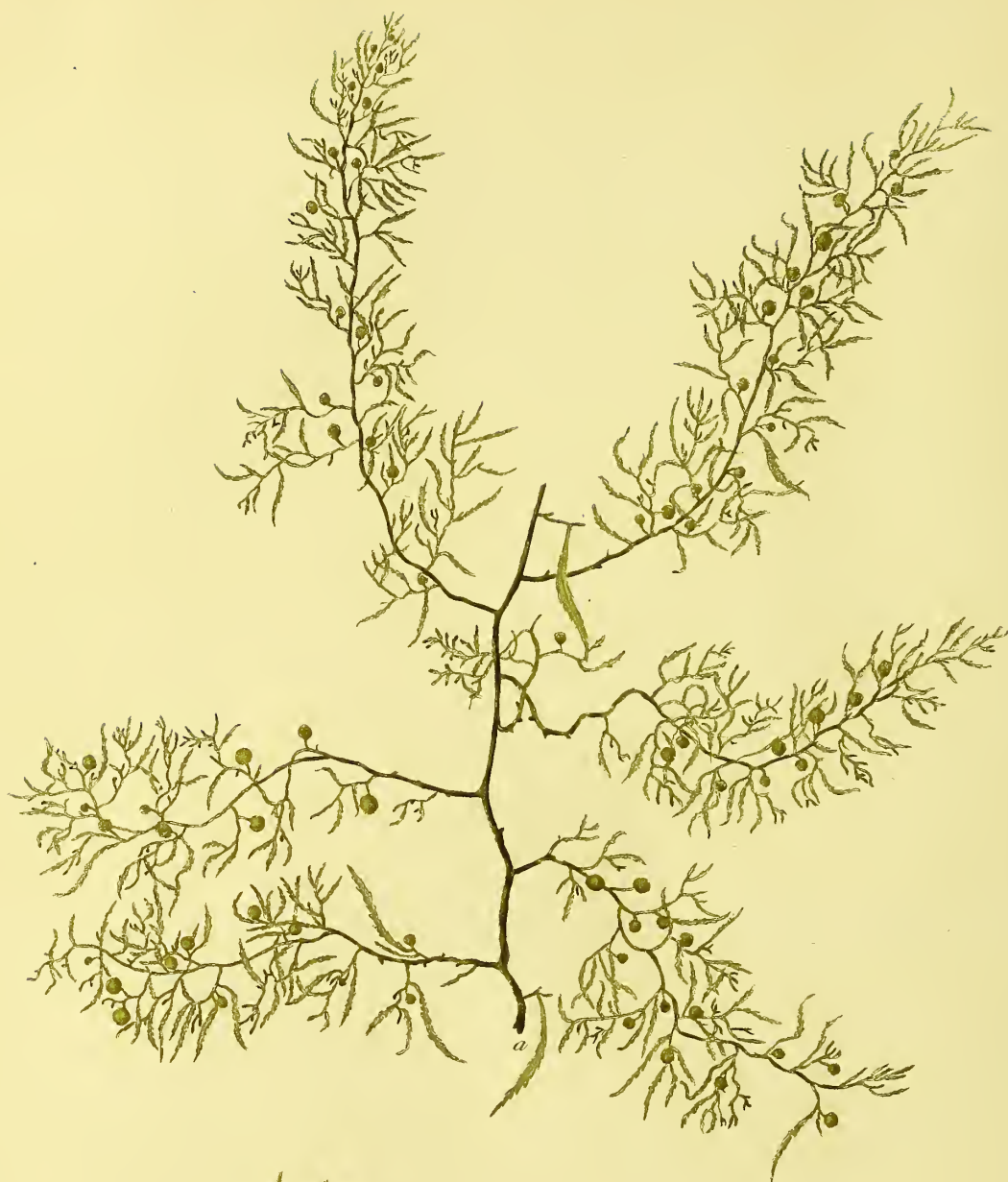
In the leaves of the *Fucus* here figured there is a strong peculiarity, as well as to color as to substance, in both which respects they may not unaptly be compared to tea-leaves that have been dried after having previously been used. The elliptical vesicles also growing regularly in pairs serve to render this plant one of those most easily to be distinguished among the numerous individuals of the family to which it belongs. I have been induced in reference to its appearance to call it *F. graminifolius*. With its history, as with its place of growth, I am wholly unacquainted,

a. *F. graminifolius*, natural size.

b. pair of vesicles, magnified - - - 6.



Fucus graminifolius.



Tucus parrifolius.

Fucus, caule coriaceo, terete, filiformi, bipinnato; ramis alternis: foliis linearibus, serratis, brevissimè petiolatis: vesiculis sphaericis, petiolatis; petiolis capillaceis: receptaculis ellipticis, solitariis, spinulosis.

HABITAT - - - - - *D. J. Banks, Baronet.*

Perennis.

RADIX nondùm a me visa.

FRONS instructa *caule* (qui quantæ sit longitudinis et an divisus necne nescio), terete, filiformi, pennæ passerinæ crassitie, flexuoso, ramis obsito homogeneis, cætera nudo; *rami* horizontales, subspiralitèr alterni, spatiis circitèr unguicularibus sejuncti, teretes, caulis omninò similes, nisi quòd duplo sint tenuiores, tripollicares et ultrà, ipsi indivisi et nudi, sed *aliis minoribus* obsiti, qui, vix unguem longi setâque haud crassiores porcinâ, lenitèr sunt flexuosi, horizontales, alterni, intervallis unius alteriusque lineæ sejuncti, indivisi, foliis vesiculis et fructu instructi; *folia* in ramis minoribus alterna, et eodem prorsùs modo quo illi in ramis primariis disposita, linearia, semiunguem longa, et vix semilineam lata, basi in petiolum brevissimum planum apice in acumen attenuata, nervo tenui nigricante percursa, margine profundè serrata et quasi spinulifera, superficie punctis mucifluis copiosè pertusa: unum aliquandò reperitur folium prope ramorum basin cæteris duplo majus, sed hoc incertum: *vesiculæ* sphaericæ, vix aciculæ majoris capita mole superantes, una modò in singulis ramis prope ortum posita, petiolo semilineam longo capillari fulta, plerumque mucrone perbrevis setaceo aristatæ, extrinsecùs læves, intùs cavæ et vacuæ.

FRUCTIFICATIO nunc ramis foliorum ad alas, nunc ipsis foliorum petiolis imposita, e *receptaculis* constans haud lineam longis, compressis, lineari-ellipticis, spinulosis, solitariis, sessilibus, vel brevissimè petiolatis, extrinsecùs ubique torulosis et pertusis poris, sub quibus latent tubercula immersa sphaerica, semina aliquot fusca elliptica foveantia.

COLOR olivaceus, subdiaphanus, *vesicularum* lutescens.

SUBSTANTIA *caulis* coriacea, *foliorum vesicularumque* cartilaginea et tenuis.

Obs. Per desiccationem præter spem fit rigida, et chartæ nequaquam adhæret.

Quæ in omnibus *F. natantis* familiæ individuis sunt notabiles, formæ elegantia et summa partium omnium symmetria, in *F. parvifolio* sunt præ reliquis conspicuæ, ut nulla ferè detur inter hanc tribum species quæ digna est ut illi componatur. Hujus perpulchræ stirpis exemplaria nobilissimo Banksio accepta refero, ab ipso in itinere circa orbem suscepto lecta, sed in quo mari vel quas ad oras incertum. *F. dentifolio* et *F. baccifero* summoperè est hæc planta affinis: dignoscenda tamen primo statim aspectu ab hoc per substantiam tenuem foliaque angustiora et magis linearia; ab ipso longè certiùs distincta, quia foliorum costa spinis nullis est instructa; hæ enim in *F. dentifolio* solo reperiendæ ejus characterem maximè essentialem præbent. *Fucus* etiam in tabulâ proximâ depingendus mole atque foliis cum hoc nostro consentit; sed illi receptacula inermia, quæ contrà in *F. parvifolio* sunt spinis undique obsita.

- | | | |
|---|-------|----|
| a. <i>F. parvifolius</i> , magn. nat. | | |
| b. <i>ramus</i> , cum <i>vesiculâ</i> , magn. auct. | - | 6. |
| c. <i>ramus</i> , cum <i>receptaculis</i> | - - - | 6. |
| d. <i>receptaculum</i> | - - - | 5. |
| e. <i>idem horizontalitèr dissectum</i> | - - - | 3. |
| f. <i>semina</i> | - - - | 1. |

Fucus parvifolius, stem coriaceous, cylindrical, filiform, bipinnate; branches alternate: leaves linear, serrated, on very short petioli: vesicles spherical, on capillary footstalks: receptacles elliptical, solitary, spinulose.

FOUND at - - - - - by Sir Joseph Banks, Bart.

Perennial.

ROOT, I have not yet seen.

FROND, furnished with a *stem*, of the length of which and how far it is divided or not I am quite ignorant, cylindrical, filiform, of the thickness of a sparrow's quill, flexuose, beset with branches, in other respects naked; *branches* horizontal, arranged in an irregularly spiral manner, alternate, separated by intervals of about a quarter of an inch each, precisely resembling the stem except that they are not above half its thickness, three inches or more long, undivided and naked, except that they also bear a series of smaller ones, which are scarcely half an inch in length, do not exceed the thickness of hog's bristles, are flexuose, horizontal, alternate, standing not more than a line or two apart, undivided, and furnished with leaves, vesicles, and fruit; *leaves* alternate upon the smaller branches, on which they are fixed in exactly the same manner as these latter upon the larger ones, linear, about a quarter of an inch long, and hardly half a line wide, their base attenuated into an extremely short petiolus, their apex acuminate, their centre furnished with a thin blackish midrib, their margin deeply serrated, and appearing spinulose, their surface plentifully perforated with mucifluous pores:—it sometimes happens that a single leaf is found at the base of a branch twice as large as the rest; but this is uncertain:—*vesicles* spherical, scarcely bigger than a large pin's head, only one on each branch, and that placed near its origin, supported upon a capillary footstalk half a line long, and generally tipped with a short setaceous mucro, externally smooth, internally empty.

FRUCTIFICATION, either growing upon the branches at the axillæ of the leaves, or upon the petioli of the leaves themselves, consisting of compressed, linear-elliptical, solitary receptacles, not a line long, either quite sessile, or standing on very short petioli, externally every where uneven, and full of pores, under which lie imbedded spherical tubercles containing a few brown elliptical seeds.

COLOR, olive-brown, semitransparent, yellowish in the vesicles.

SUBSTANCE, coriaceous in the stem, in the leaves and vesicles cartilaginous and thin.

OBS. In drying it acquires an unusual degree of rigidity, and does not in the least adhere to paper.

Though all the family of *F. natans* are in point of form and general appearance among the most elegant of the submersed algæ, there is perhaps no one of the tribe more striking in these respects than the plant here figured, the exquisite neatness and symmetry of which in all its parts are in the highest degree attractive and pleasing. I am indebted for it to Sir Joseph Banks, who gathered it in the course of his voyage round the world, but did not preserve any note of the spot in which he found it. It is nearly allied to *F. dentifolius* and *F. bacciferus*, from the former of which it is easily distinguished by wholly wanting the toothed midrib, the great character of that species, and from the latter by its singularly different texture. Its leaves too are by far more narrow and more linear. The subject of the following plate, to which in size and foliage it bears a stronger resemblance, has its capsules completely smooth.

a. <i>F. parvifolius</i> , natural size.						
b. branch with vesicle	-	-	-	-	-	6.
c. branch with fruit	-	-	-	-	-	6.
d. receptacle	-	-	-	-	-	5.
e. horizontal section of the same	-	-	-	-	-	3.
f. seeds	-	-	-	-	-	1.

Fucus, caule coriaceo, terete, filiformi, bi-tri-pinnato; ramis alternis: foliis linearibus, angustissimis, serrato-dentatis: vesiculis sphaericis, petiolatis; petiolis sursum versus dilatatis: receptaculis ellipticis, subsolitariis, inermibus.

MISSA ex Indiæ Orientalis oris ad J. E. SMITH, M. D.

Perennis.

RADIX nulla hactenus detecta.

FRONS instructa *caule* bi-tri-pedali, aut forsân multo longiore, integrum enim nondum vidi, terete, filiformi, Merulæ pennæ crassitie, leniter flexuoso, indiviso, sed ramis per totam longitudinem obsito, cætera nudo; *rami* caulis omnino similes, nisi quod duplo sint tenuiores, ordine subspiralitèr alterno dispositi, intervallo inter singulos nunc vix pollicari nunc semipedali, sesquipedales et ultrâ, omnes horizontalitèr patentès, indivisi, et nudi, sed obsiti serie minorum, qui eodem sunt modo in ramis primariis quo hi in caule dispositi, et sunt paritèr teretes filiformesque, pennâ haud crassiores passerinâ, inferiores sæpe bipollicares, summi vix totidem lineas longi, omnes quoque indivisi, sed foliiferi, vesiculiferi, fructiferique; *folia* in ramis alterna, solitaria, spatiis duarum triumve linearum sejuncta, linearia, sesquiunguem longa, et vix tertiam lineæ partem lata, sessilia, costâ teneri nigricante percursa, margine sparsim serrato-dentata; *vesiculæ* foliorum, nec tamen omnium, ad basin sitæ, quorum instar solitariæ nascuntur, *Viciæ sativæ* seminibus duplo minora, elliptico-sphæricæ, apice minutissimè mucronatæ, petiolo perbrevis compresso sursum versus dilatato insidentes, extrinsecus læves, intus cavæ et vacuæ.

FRUCTIFICATIO ramis minoribus imposita prope alas foliorum, vel ipsorum foliorum basi quâ in petiolum attenuatur, e receptaculis constans exiguis, haud lineam longis, solitariis, lineari-lanceolatis: prohibet autem meorum exemplarium status nimis imperfectus quominus plura de his loquar.

COLOR olivaceus, *exsiccata* rufo-fuscus.

SUBSTANTIA cartilaginea.

OBS. Folia magis crispata quàm quod plerumque in hâc tribu valet:—per desiccationem levitèr adhæret chartæ.

Foliis hujus Fuci angustissimis nisus non dubitavi hîc pro novâ distinctâque specie delineatum exhibere; quod ut magis fidentèr facerem suaserunt exemplaria quæ penes amicissimum Smithium vidi, quæ, quantumvis basin versus sint manca, tantæ sunt molis ut plantam recensendam censerem inter maximas quas *F. natantis* familia jactat. Descripsi jam in hoc opere duas ex eâdem tribu stirpes foliis lineari-lanceolatis serrato-dentatis paritèr præditas: plures quarum folia ejusdem sunt figuræ nondum vidi. Hæ tres, ut alia præteream discrimina quæ utriusque iconibus inter se collatis patebunt, statim a se invicem per notas sunt sequentes dignoscendæ.

Fucus dentifolius; foliorum costâ serratâ.

Fucus parvifolius; costâ inermi; capsulâ spinosâ.

Fucus angustifolius; costâ capsulisque inermibus.

a. *F. angustifolius*, magn. nat.

b. *rami pars, cum vesiculâ et capsulâ*, magn. auct. - 6.

Fucus angustifolius, stem coriaceous; cylindrical, filiform, twice or thrice pinnated with alternate branches: leaves linear, very narrow, serrato-dentate: vesicles spherical, standing on petioli dilated upwards: receptacles elliptical, mostly solitary, smooth.

SENT from the East Indies to Dr. Smith.

Perennial.

ROOT, at present unknown.

FROND, furnished with a stem from two to three feet long, or perhaps much longer, for I have never seen it entire, cylindrical, filiform, of the thickness of a blackbird's quill, slightly flexuose, undivided, but beset from top to bottom with branches, in other respects naked; branches exactly like the stem, except that they are not above half its thickness, disposed alternately in an irregularly spiral manner, separated by intervals of very variable length, some of them being not more than an inch, others half a foot apart, a foot and half or more long, all between horizontal and patent, and all undivided and naked, but beset with a series of smaller ones, which are arranged in the same order upon the primary branches as they themselves are upon the stalk, and are also cylindrical and filiform, not more thick than a sparrow's quill, the lowest often two inches, the upper ones scarcely as many lines in length, all likewise undivided, but bearing leaves, vesicles, and fruit; leaves alternate upon the branches, solitary, two or three lines distant from each other, linear, three-fourths of an inch long, and hardly a third of a line wide, sessile, furnished with a thin blackish midrib, their margins serrated with largish scattered teeth; vesicles placed at the base of the leaves, but by no means of all of them, solitary, not more than half the size of the seeds of the common vetch, of a form between elliptical and spherical, tipped with an extremely minute mucro, and supported upon a very short, compressed footstalk which is dilated upwards; externally they are smooth, internally hollow and empty.

FRUCTIFICATION, placed either upon the smaller branches at the axillæ of the leaves, or on the lower narrow part of the leaves themselves, consisting of small, solitary, lineari-lanceolate receptacles not a line long; but the imperfect state of the fruit in my specimens prevents me from saying any thing of their contents.

COLOR, olive-brown, turning from drying to a red brown.

SUBSTANCE, cartilaginous.

OBS. The leaves are more curled than is common in this family: in drying, it adheres, though but slightly, to paper.

The exceeding slenderness of the leaves of this *Fucus* is so remarkable that I have not hesitated about describing it as a distinct species; especially as the specimens which I have seen of it in the possession of Dr. Smith lead me to believe that the plant itself is one of the largest of the tribe of *F. natans*. I have already in the course of this work figured two other *Fuci* of the same family equally furnished with lineari-lanceolate and serrated leaves. These, which are all with which I am acquainted that are possessed of similar foliage, may immediately be distinguished from each other by the following marks, independently of the other differences which will be seen by a reference to the figures.

Fucus dentifolius: midrib of the leaves toothed.

Fucus parvifolius: midrib smooth; capsule spinous.

Fucus angustifolius: midrib and capsules smooth.

a. *F. angustifolius*, natural size.

b. leaf, with vesicle and capsule, magnified - - 6.



Tucus angustifolius.

Fucus, caule coriaceo, teretiusculo, filiformi, vagè pinnato; ramis alternatim secundis: foliis obovato-cuneiformibus, integerrimis crenulatisve, mediotenus uninervibus: vesiculis ellipticis, utrinque acuminatis, sessilibus: receptaculis subsolitariis, ellipticis, compressis.

HABITAT in Mari Rubro. D. Salt.

Perennis.

RADIX nondùm detecta.

FRONS instructa caule tripedali et ultrà, e terete compresso, filiformi, merulæ pennæ crassitie, lenitèr flexuoso, indiviso, sed per totam longitudinem ramis obsito, cætera nudo; *rami* nunc alterni, nunc, quod sæpiùs accidit, duo vel tres alternatim secundi, spatio inter singulos sesqui-bi-pollicari, patentes, longitudine circiter palmari, inferiores tamen paullò longiores, summi duplò breviores, omnes compressi, caule bis terve tenuiores, flexuosi, et indivisi, plerique simplices, sed quidam ex inferioribus modò vagè pinnati serie minorum, qui, duas tresve lineas longi, eodem sunt modo in ramis primariis quo ipsi sunt in caule dispositi; ramorum in ultimà serie, sive primariis sive secundariis, sed nullibi aliàs, nascuntur folia, vesiculæ, et fructus; *folia* alterna, intervallo duarum ferè linearum inter singula, patentia, figuræ ex obovatâ et cuneiformi compositæ, basi scilicet angustata, hinc sursum versus sensim dilatata, atque apice rotundata, aut, quod sæpe est videre, eroso-truncata, unguem longa, et vix sesquilineam in parte latissimâ lata, nervo tenui pallido juxta medium evanescente instructa, semper sessilia, margine in pluribus integerrimo, in quibusdam vagè spinuloso; *vesiculæ* solitariae vel geminae, foliorum, nequaquàm tamen omnium, ad alas sitæ, ellipticæ, utrinque longè acuminatæ, ut hinc rostrata illinc breviter petiolata non malè diceret, *Caricis pulcaris* seminibus haud ita absimiles, sed his duplò majores, extrinsecùs læves, intùs cavæ et vacuæ.

FRUCTIFICATIO, quæ meis est in exemplaribus neutiquàm perfecta, sita invenitur unà cum vesiculis ad alas foliorum, e *receptaculis* constans, vel solitariis, vel geminis ternisve, haud lineam longis, ellipticis, compressis, his indivisis, illis bifurcis, omnibus ubique pertusis poris minutissimis, sub quibus latent tubercula immersa sphærica, singula semen unicum subrotundum fuscum includentia.

COLOR fulvus, olivaceo perfusus; in caule ramisque intensus et opacus, in foliis dilutus atque subdiaphanus: tota stirps exsiccata nigrescit.

SUBSTANTIA cartilaginea, tenuis.

Obs. Per desiccationem non adhæret chartæ.

Gratâ cum mente agnosco auxilium quod ad hanc operam locupletandam contulit D. Salt, vir cujus fama in orbe literario per iter in Abyssiniam unà cum nobilissimo Valentia susceptum diu inclaruit; libentèrque igitur illi dicatum ipsius nomine insignitum in hac tabulâ Fucum exhibeo. Hanc stirpem, quæ inter pulcherrimas est habenda, ex Abyssiniâ nuper iterùm redux benevolè ad me misit: multis quoque adjectis aliis, quas omnes in Mari Rubro legit; cujus littora, sicut suspicari licet, cùm e collectaneis Valentianis Saltianisque tum e fasciculo Algarum submersarum exinde a nob. Banksio acceptarum, imprimis scatent Fucis *F. natanti* congeneribus atque iis quos Lamourouxius *Caulerpas* dixit. E reliquis illinc missis maxima pars fuerunt Fuci Ulvæque crassi coriaceique. Vix una atque altera interfuit *Conferva*, sed tot Zoophyta ut talia quærenti magnam sperare liceret messem. Ut verò ad *Fucum Saltii* revertar et de ejus affinitatibus loquar, videntur mihi *F. fulvellus* et *F. hemiphyllus* esse stirpes quibuscum maximè est cavendum ne commisceretur; sed, ut alia omittam, discrepat ab his quòd folia habeat nervo reverà prædita, quamvis ad medium modò attingente; et certissimè ad familiam Fucorum *F. natanti* congenerum pertinet, quibus ab omnibus primo est dignoscendus aspectu.

a. <i>F. Saltii</i> , magn. nat.				
b. <i>ramus, foliis integerrimis</i> , magn. auct.	-	-	-	6.
c. <i>rami pars, folio serrato</i>	-	-	-	6.
d. <i>receptaculum simplex</i>	-	-	-	4.
e. <i>receptaculum bifurcum</i>	-	-	-	4.
f. <i>receptaculum horizontalitèr dissectum</i>	-	-	-	2.
g. <i>vesicula</i>	-	-	-	5.

Fucus Saltii, stem coriaceous, subcylindrical, filiform, irregularly pinnated; branches alternately secund: leaves obovato-cuneiform, entire or crenulated, halfway ribbed: vesicles elliptical, acuminate at both ends, sessile: receptacles mostly solitary, elliptical, compressed.

In the Red Sea. *Mr. Salt*.

Perennial.

ROOT, at present undiscovered.

FROND, furnished with a stem three feet or more long, between cylindrical and compressed, of the thickness of a blackbird's quill, slightly flexuose, undivided, but beset throughout its whole length with branches, in other respects naked; branches either alternate, or, as more commonly happens, growing two or three from one side of the stem and then as many from the other, divided by intervals of an inch and half or two inches each, patent, most of them about three inches in length, but the lower ones somewhat longer, and the upper ones considerably more short, not more than half or a third of the thickness of the stem, flexuose and undivided, most of them simple, but a few of the lower ones irregularly pinnated with a set of still smaller branches, which are disposed in the same way on the primary shoots as they themselves are upon the stem, and are not more than two or three lines in length; on the last series of branches, whether primary or secondary, but nowhere else, are found leaves, vesicles, and fruit; leaves alternate, about two lines apart from each other, patent, of a shape between obovate and cuneiform; their apex rounded, or truncate, as if erose, half an inch long, and scarcely a line and half wide in their widest part, marked for about half their length with a thin pale evanescent midrib, always quite sessile, their margins mostly entire, but occasionally fringed with a few little teeth; vesicles either solitary or in pairs, situated at the axillæ of the leaves, but by no means of all of them, elliptical, yet so strikingly acuminate at both ends that they may be said to be rostrated at their apex and at their base attenuated into a short petiolus, not unlike in shape to the fruit of *Carex pulicaris*, but twice as large, externally smooth, internally hollow.

FRUCTIFICATION, by no means so perfect as I could wish upon my specimens, placed together with the vesicles at the base of the leaves, consisting of receptacles, which are either solitary or grow two or three together, not a line long, elliptical, compressed, some simple, others forked, all full of minute perforations, under which lie imbedded spherical tubercles, each containing a single brown roundish seed.

COLOR, tawny, with an olive tinge; dark and opaque in the stem and branches; in the leaves and vesicles light and semitransparent; turning black all over from drying.

SUBSTANCE, cartilaginous and thin.

Obs. In drying, it does not adhere to paper.

For my specimens of this *Fucus*, as well as of many others, I am indebted to Mr. Salt, who has long been advantageously known to the public by the share which he bore in the travels of Lord Valentia, and who is likely, I trust, soon again to appear before them, with an account of his own second expedition to Abyssinia, whence he is recently returned. It was during this latter voyage that he gathered this elegant *Fucus*, which I have with much pleasure called by his name, in memory of the obligations I owe him for his assistance towards this work. It is in species of the same family as the plant here figured and in the Lamourouxian *Caulerpæ* that the Red Sea appears to be most prolific. The other marine Algæ which I have received thence have been comparatively few, and have principally been confined to the coarser Fuci and Ulvæ. Of Confervæ I have scarcely seen any; but I suspect that a plentiful harvest might be obtained there of Zoophytes. *F. fulvellus* and *F. hemiphyllus* are perhaps the two plants with which *F. Saltii* is most likely to be confounded. It, however, has a midrib to its leaves, and it evidently belongs to the family of *F. natans*, from the other individuals composing which it is very distinct.

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|--|----|
| a. <i>F. Saltii</i> , natural size. | |
| b. small branch, with entire leaves, magnified | 6. |
| c. portion of a branch, with a serrated leaf | 6. |
| d. receptacle | 4. |
| e. forked receptacle | 4. |
| f. horizontal section of a receptacle | 2. |
| g. vesicle | 5. |



Fucus Saltii.

Fucus, caule coriaceo, ancipite, filiformi, ramis brevissimis alternis pinnato : foliis ellipticis, profundè inciso-serratis, mediotenus uninerviis, subsessilibus : vesiculis raris, sphaericis, petiolatis, petiolo compresso, folioque brevi aristatis : receptaculis cylindraceis, spinulosis, racemosis.

HABITAT ad Caput Bonæ Spei. *D. Menzies*.

Perennis.

FRONS instructa *caule*, de cujus longitudine et an divisus sit necne nihil est quod dicam, plano, ancipite, lineari, vix unam lineam lato, flexuoso, ramis ubique pinnato, cætera nudo ; *rami* caulis omninò similes, nisi quodd minores sint, distichi, alterni, caulis e lateribus acutis orti, intervallis subpollicaribus sejuncti, horizontales, plerique circiter sesquipollicem longi, summi tamen duplò breviores, omnes simplices, foliisque vesiculis et fructu instructi ; *folia*, ramorum instar, disticha, alterna, horizontalia, et remotiuscula, unum singulorum ramorum ad basin ferè pollicem longum et tres lineas latum, reliqua duplò triplòve minora, cuncta plana, elliptica, vel lineari-lanceolata, nervo obsoleto nigricante tenui mediotenus percursa, basi ita attenuata ut potiùs brevissimè petiolata quàm verè sessilia diceret, apice acutiuscula, margine enormitèr incisa, dentibus magnis spiniformibus remotiusculis ; *vesiculæ* infrequentes, ut pauci rami plures quàm unam jactent, multi nullam, sphaericæ, *Vicia sativæ* seminum magnitudine, foliorum inferiorum ex alis ortæ, extrinsecùs læves, intùs planæ et vacuæ, petiolo plano sursum dilatato circiter lineam longo fultæ, et folio brevi aristatæ.

FRUCTIFICATIO *receptacula* cylindracea, vix lineam longa, variè ramosa, racemosim disposita, foliorum ad alas sita, extrinsecùs ubique torulosa, sed ætas haud satis provecta prohibuit quominus tubercula interna vel semina conspicerentur.

COLOR *plantæ recentis* olivaceus ; *exsiccata* nigerrimus ; *rursùs madefactæ* in caule niger, in foliis intensè fuscus.

SUBSTANTIA in *caule* coriacea ; in *foliis* cartilaginea, tenax.

OBS. Stirps glabra, insignitèr plana, nec minimum crispata : exsiccatione chartæ nequaquàm adhæret.

Exemplar, quod in hâc tabulâ depictum a Menziesio accepi, est unicum quod hujusce stirpis hactenus vidi. Foliis mediotenus modò costatis cum *Fuco Saltii* convenit *F. incisifolius*, cætera dissimillimus, neque ullo modo *F. fulvello* aut *F. hemiphylo*, illius instar, affinis. Contrà procul dubio est annumerandus congeneribus *F. natantis*, locandusque est inter illos quibus folia sunt lineari-oblonga. Tales non nisi quatuor hucusque vidi, a quibus omnibus per vesiculas sphaericas glabras hæc nostra species dignoscitur.

a. *F. incisifolius*, magn. nat.

b. *ramus*, magn. auct. - - - 6.

c. *receptacula* - - - 4.

Fucus incisifolius, stem coriaceous, two-edged, filiform, pinnated with very short alternate branches : leaves elliptical, deeply inciso-serrated, half-way ribbed, nearly sessile : vesicles scarce, spherical, standing on compressed petioli, and tipped with a short leaf : receptacles cylindrical, spinous, racemose.

At the Cape of Good Hope. *Mr. Menzies*.

Perennial.

FROND, furnished with a *stem* (of the length of which, and how far it is divided or not, I am unable to give any opinion), flat, two-edged, preserving everywhere an equal width of scarcely a line, flexuose, pinnated from top to bottom with branches, in other respects naked ; *branches* distichous, alternate, originating from the sharp edges of the stem, which they precisely resemble except in their smaller size, placed at intervals of about an inch each, horizontal, most of them about an inch and half long, but the upper ones very much shorter, all simple, and bearing leaves, vesicles, and fruit ; *leaves*, like the branches, distichous, alternate, horizontal and rather remote, one at the base of every branch almost an inch long and three lines wide, the rest not above a third of that size, the whole flat, elliptical, or lineari-lanceolate, marked about half their length with a thin obsolete blackish midrib, at their base so attenuated that they might rather be called shortly petiolated than completely sessile, at their apex slightly pointed, their margins irregularly cut with largish spiniform rather remote teeth ; *vesicles* far from numerous, so that scarcely any branch can shew more than one and most have none, spherical, of the size of the seeds of the common *Vetch*, originating from the axillæ of the lower leaves, externally smooth, within empty, each supported upon a flat footstalk about a line long, and terminated by a short small leaf.

FRUCTIFICATION, cylindrical *receptacles* hardly a line in length, variously branched and serrated, disposed in racemi at the alæ of the leaves, unequal all over on their surface, and undoubtedly containing seeds and tubercles like the rest of the *Fuci* allied to the present, but the unripe state of my specimen does not admit of my discovering them.

COLOR, an olive-green in the recent plant, quite black when dry ; if again moistened, black in the stem, and deep brown in the leaves.

SUBSTANCE, coriaceous in the stalk, in the leaves cartilaginous and tough.

OBS. Whole plant smooth, and singularly flat, so as not to shew the least tendency to curl : in drying, it does not at all adhere to paper.

I have at present seen no more of this *Fucus* than the specimen here figured, which so far agrees with *Fucus Saltii* that the midrib extends to only half of the length of the leaves, but differs from it in almost every other particular. To *F. fulvellus* or *F. hemiphyllus* it does not bear the least resemblance. It belongs to the section of the family of *F. natans*, the leaves of which are lineari-oblong, and from the other individuals of this division it is distinguished by the smoothness and spherical shape of its vesicles.

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|---|---|---|----|
| a. <i>F. incisifolius</i> , natural size. | | | |
| b. <i>branch</i> , magnified | - | - | 6. |
| c. <i>receptacles</i> | - | - | 4. |



Tucus incisifolius.

Fucus, fronde cartilagineâ, planâ, enervi, dichotomâ, palmatâque; segmentis sursum versus dilatatis; marginibus sparsim dentatis; apicibus incis, acuminatis: tuberculis hemisphæricis, sparsis, sessilibus, demum disruptis, membranâque crenato-denticulatâ coronatis.

Fucus granateus. LAMOUROUX, *Diss. de Fucis*. p. 68. t. 33. f. 3, 4.

F. multipartitus. CLEMENTE, p. 311.

HABITAT in Franciâ Hispaniæque oris. *Lamouroux*.—Circa Algeciras, Tarifa, et Gades. *Clemente*.

Perennis?

RADIX callus exiguus, discoidens, dilutè roseus.

FRONDES ex eâdem basi plurimæ, quadri-sex-pollicares, basi teretiusculæ et vix pennâ crassiores passerinâ, mox quamprimum ad semiunguis altitudinem attigerunt compressæ lenitèrque dilatatæ, et priusquàm pollicem sunt altæ planæ, sicut ad apices usque pergunt; semper dum assurgunt sensim sed lenissimè magis magisque dilatatæ ut prope extremitates vix trium linearum latitudinem exuperent; nervo venisque ubique carent; ad exiguum a basi intervallum bifurcæ fiunt, et postea sæpe sunt dichotomæ, aut aliquandò subpalmatæ, intervallo inter singulas furcas brevi attamen incerto; præter hoc alii etiam rami e frondis lateribus interdum hinc illuc oriuntur, qui, absque ordine sparsi et longitudinis incertissimæ, reliquos formâ referunt, horumque instar sunt dichotomi palmative; margines nunc integerrimi,* nunc, quod quidem sæpius est videre, dente uno alterove homogeneo, brevi, incurvo, vix lineam longo obsiti; apices bifidi trifidive, segmentis abbreviatis acuminatis.

FRUCTIFICATIO tubercula solitaria, copiosè in utrâque frondis paginâ sparsa, et totam ferè occupantia, nisi quæ teres vel compressa est, hemisphærica, papaveris seminum magnitudine, mucrone terminata minutissimo, qui, teste Lamourouxio, cujus verbis utor, "turgens cum ætate dilatatur, occurritque corona crenato-denticulata, granatorum coronæ haud absimilis;" semina intus plurima, densè in glomerulum constipata, subrotunda, minutissima, intensè rubra.

COLOR lætè roseus, haud diaphanus, *exsiccatæ* intensior.

SUBSTANTIA cartilaginea, tenax.

OBS. Per desiccationem, non adhæret chartæ:—tubercula, seminibus dimissis, tota decidunt, frondem ubique pertusam relinquentia.

Cùm in primo *Historiæ Fucorum* tomo *F. laceratum* describerem, ductus sum ut pro illius speciei synonymo *F. granateum* Lamourouxii citarem; quod ut magis audactè facerem impulit non modò illust. auctoris icon, sed magis adhuc ea descriptionis pars in quâ frondis substantiam membranaceam teneramque dixit. In hoc autem, sicut pluries etiam aliàs mihi accidit, error de certo tramite pepulerat, quod Mertensii optimi acumen detexit, ejusdem amicitia palantem coarguit. Mox quoque quod dubitationis resisterat penitus sustulit, misso *F. granatei* exemplare ipsius Lamourouxii manu notato. Nova hinc lux affulsit, et in stirpe Lamourouxianâ *F. multipartitum* Clementi, plantam jam olim mihi cognitam, agnosco: neque tamen in speciminibus Gallicis neque in Hispanis fructum reperio adeò maturum ut liceat mihi de hoc tam certò quàm vellem ex autopsiâ loqui. Hoc maximè dolet, quia, secundum iconem descriptionemque in Lamourouxii *Dissertationibus* datas, *F. granateus* quoad capsularum formam a reliquis omnibus Algis submersis hactenùs descriptis longè recedit, nomenque summo jure hinc ductum plantæ imponitur. Neque tamen per fructificationem solam a *F. lacerato* discrepat; frondem enim habet nequaquàm tenuem teneramque, sed substantiæ ad coriaceam accedentis, nec minùs crassam quàm ea *F. laciniati*: habitus quoque diversus, quippe omninò est planus, neque ullo modo crispatus; atque insupèr apices habet incisos, segmentis acuminatis. Major est ea quæ inter *F. granateum* et *F. Sarniensem* interest similitudo, et quidem, quod ad frondis formam crescendique modum attinet, maxima; sed hinc quoque fructificatio diversissima, et aliquid etiam est in utriusque colore discrimen. *Fuci* sui *multipartiti* tres varietates descripsit Clemente, e quibus primam modò jam vidi, sed omnium characteres ab ipso datos hinc repeto, lectori obsecuturus, et forsàn ad plantam rectiùs intelligendam quiddam collaturus.

"*Fucus multipartitus*. Fronde planâ enervi coriaceâ laciniato-subpalmatâ margine subciliatâ, laciniis multipartitis, ciliis patentibus, tuberculis immersis hinc concavis."

* Frondis margines levitèr crispatos dicit Lamourouxius, quod tamen ego nunquam vidi, neque in plantâ ab ipso missâ neque in Clementianâ.

"*F. multipartitus*. v. α . *crispus*. Apicibus subdentato-crispis subrotundatis."

"*F. multipartitus*. v. β . *elongatus*. Segmentis extremis valdè elongatis subsimplicibus constantè attenuatis."

a. <i>F. granateus</i> , magn. nat.					
b. <i>ramus</i> , magn. auct.	-	-	-	-	6.
c. <i>tuberculum</i>	-	-	-	-	4.
d. <i>idem dissectum</i>	-	-	-	-	3.
e. <i>semina</i>	-	-	-	-	1.

215.—FUCUS GRANATEUS.

Fucus granateus, frond cartilaginous, flat, nerveless, dichotomous or palmate, with segments widening upwards; margins here and there toothed; apices cleft, acuminate: tubercles hemispherical, scattered, sessile, at length bursting, and edged with a crenato-denticulated membrane.

Fucus granateus. LAMOUROUX, *Diss. de Fuc.* p. 68. t. 33. f. 3, 4.

F. multipartitus. CLEMENTE, p. 311.

On the coast of France and Spain. *Lamouroux*.—About Algeziras, Tarifa, and Cadiz. *Clemente*.

Perennial?

Root, a small, pale-pink, callous disk.

FRONDS, numerous from the same base, from four to six inches long, at their base nearly cylindrical and scarcely thicker than a sparrow's quill, but as soon as they have risen to half an inch in height becoming compressed and slightly dilated, and before they are an inch high quite flat, in which state they continue to their extremities, always widening more and more as they proceed, but so slowly that at their tips they hardly exceed three lines; they are everywhere destitute of veins and midrib; at a short distance from the root they become forked, and are afterwards repeatedly divided in a dichotomous or in some instances a palmate manner, the intervals between each division being short but uncertain; besides this mode of branching, other shoots occasionally originate here and there from the sides of the frond, most uncertain in point of length, scattered without any regularity, resembling the others in shape, and, like them, dichotomous or palmate; the margins* are either entire, or, as is more commonly the case, rough with a few short incurved teeth, scarcely a line long, of the same nature and substance as the rest of the frond; the apices are bifid or trifid, with short acuminate segments.

FRUCTIFICATION, hemispherical tubercles, standing solitary, but scattered so plentifully over both sides of the frond as in some cases nearly to cover it, about the size of poppy seed, tipped with a very minute mucro, which, according to Lamouroux, swells as it ripens, and at length bursting forms round the orifice a crenato-denticulated coronet, like that of a pomegranate; within is a compact mass of exceedingly minute, roundish, deep-red seeds.

COLOR, bright pink, not transparent, darker when dry.

SUBSTANCE cartilaginous, tough.

OBS. In drying, it does not adhere to paper:—the tubercles, after they have discharged their seeds, fall out, leaving the frond full of holes.

* Lamouroux calls the margins slightly curled, which is what I never saw, nor do I find them so, either in his specimens or in those sent by Clemente.



Fucus granateus.

In describing *Fucus laceratus* in the first volume of this work, I was led to quote the *F. granateus* of Lamouroux as a synonym to my variety γ of that species; and this I was induced to do, as well by the figure given in the *Dissertations sur plusieurs espèces de Fucus*, as by that part of the description in which the substance is said to be membranous and tender. In this, however, as in many other instances, I have had occasion to correct myself from the observations of Professor Mertens, who without delay pointed out to me the error into which I had fallen, and has lately been kind enough most effectually to remove all doubts by the communication of a specimen from M. Lamouroux himself. In this specimen I recognized a plant which I had previously received from M. Clemente, as his *F. multipartitus*, and I only regret that neither from the one Botanist nor the other have I had it in such a state, as to enable me to describe of my own knowledge the ripe fruit, in respect to which, according to the remarks and figure of M. Lamouroux, this plant must most widely differ from every other marine alga yet known. Its name therefore is with great propriety derived from such a peculiarity. Independently of this circumstance it differs from *F. laceratus* in its substance, which, far from being tender and thin, is as thick as that of *F. laciniatus* and tough and inclining* to coriaceous, while its whole frond lies flat, without even shewing the least tendency to curl, and the apices are cleft and pointed. To *F. Sarniensis* our *F. granateus* is far more nearly allied, nor should I have dared to have figured them as distinct, but for the difference of their fructification; though there is certainly also some dissimilarity in their color. Clemente describes three separate varieties of this plant, the first of which only I have seen, and I can therefore do no more than copy his descriptions, which I here transcribe for the benefit of such of my readers as may not be in possession of his work.

"*F. multipartitus*. Fronde planâ enervi coriaceâ laciniato-subpalmatâ margine subciliatâ, laciniis multipartitis, ciliis patentibus, tuberculis immersis hinc concavis."

"*F. multipartitus*. v. α . *crispus*. Apicibus subdentato-crispis subrotundatis."

"*F. multipartitus*. v. β . *elongatus*. Segmentis extremis valdè elongatis subsimplicibus constantè attenuatis."

a. <i>F. granateus</i> , natural size.				
b. <i>branch</i> , magnified	-	-	-	6.
c. <i>tubercle</i>	-	-	-	4.
d. <i>section of the same</i>	-	-	-	3.
e. <i>seeds</i>	-	-	-	1.

* Clemente calls it completely coriaceous.

Fucus, fronde cartilagineâ, plana, enervi, dichotomâ, integerrimâ, crispo-undulatâ; segmentis sub-cuneiformibus, summis angustissimis: tuberculis subrotundis solitariis, sparsis, in fronde immersis, hinc concavis, deciduis.

Fucus crispus. LINN. *Mant.* p. 134. (excl. syn. Moris.) *Syst. Nat.* II. p. 718. *Syst. Nat. ed. Gmel.* II. p. 1387. *Fl. Norv.* II. p. 91. *Linn. Trans.* III. p. 169. WITH. IV. p. 106. *Syn. Fuc.* II. p. 226. CLEMENTE, p. 313. WAHLENB. *Fl. Lapp.* p. 497.

F. ceranoides. GMELIN, *Hist. Fuc.* p. 115. t. 7. f. 1. (excluso hîc et ubique synonymo Linneano.) * *Fl. Ang.* p. 582. † *Fl. Scot.* p. 913. ROTH, *Fl. Germ.* III. p. 450. ESPER, *Îc. Fuc.* I. p. 143. t. 98. ‡ f. 1. 2. 3. *Fl. Ped.* II. p. 330. § *Fl. Lus.* II. p. 435?

F. membranifolius. WITH. IV. p. 106.

F. polymorphus. LAMOUROUX, *Diss.* (excl. syn. plur.) p. 1. t. 4. f. 8. t. 5. f. 10, 11.

F. membranaceus ceranoides variè dissectus. RAII *Syn.* p. 44. n. 16.

F. membranaceus ceranoides ramosus per siccitatem obsoletè virescens. RAII *Syn.* p. 44. n. 17.

Ulva crispa. *Fl. Fr. Ed. 2da.* II. p. 13. (excl. var. δ ad mammillosum pertinente.)

β. *virens*; fronde membranaceâ; ramis sursum versus dilatatis, planiusculis, laciniis extremis longiusculis, acuminatis.

F. crispus. β. Linn. *Trans.* III. p. 169. *Syn. Fuc.* II. p. 226.

F. polymorphus. LAMOUROUX, *Diss.* p. 1. t. 16. f. 35.

γ. *stellatus*; fronde submembranaceâ; ramis sursum versus dilatatis, apice in lacinias numerosissimas confertas breviusculas divisas.

F. crispus. γ. Linn. *Trans.* III. p. 169. *Syn. Fuc.* II. p. 226.

F. stellatus. Ner. *Brit.* p. 53. t. 12.

F. pusillus. ESPER, *Îc. Fuc.* II. p. 67. t. 142.

δ. *aqualis*; fronde cartilagineâ, crassâ; ramis omnibus æqualibus, linearibus, laciniis extremis obtusis.

F. crispus. δ. Linn. *Trans.* III. p. 169. *Syn. Fuc.* II. p. 227.

F. foliifer. ESPER, *Îc. Fuc.* p. 106. t. 52. (|| excl. syn. Forsk.)

F. crispatus. *Fl. Dan.* t. 826.

¶ *F. crispus*. Ner. *Brit.* p. 63. t. 12. *Eng. Bot.* XXXII. t. 2285.

F. crispus, var. ESPER, *Îc. Fuc.* II. p. 69. t. 144. et t. 144. A.

F. polymorphus. LAMOUROUX, *Diss.* p. 1. t. 8. f. 16. t. 9. f. 22.

F. dichotomus membranaceus e viridi flavescens, angulos rotundiusculos efformans. MORIS. *Hist. Plant. Or.* III. p. 646. s. 15. t. 8. f. 11.

ε. *filiformis*; fronde cartilagineâ, teretiusculâ; ramis sublinearibus, laciniis extremis elongatis, longè acuminatis.

F. crispus. ε. Linn. *Trans.* III. p. 169. *Syn. Fuc.* II. p. 227.

F. filiformis. *Fl. Ang.* p. 585.

F. ceranoides, var. GMELIN, *Hist. Fuc.* p. 115. t. 7. f. 3.

F. ceranoides albidus ramulorum apicibus stellatis. RAII *Syn.* p. 44. n. 18.

ζ. *patens*; fronde subcartilagineâ, hinc canaliculatâ, dichotomâ; dichotomiis patentibus.

F. crispus. ζ. *Syn. Fuc.* II. p. 227.

F. patens. Linn. *Trans.* III. p. 173.

F. polymorphus. LAMOUROUX, *Diss.* p. 1. t. 6. f. 12, 13. t. 8. f. 17. t. 12. f. 28.

η. *lacerus*; fronde cartilagineâ compressâ; apicibus angustissimis, elongatis, ramosis.

F. crispus. η. *Syn. Fuc.* II. p. 227.

* Tantummodo Hudsoni varietates α, β, et δ ad *F. crispum* verè pertinet: var. ejus γ jam in hoc opere ad *F. membranifolium* refertur.

† Liqueet Lightfootium, eodem quo Hudsonus modo, alias stirpes unâ cum *F. crispo* commiscuisse: var. ejus γ est nostra *F. membranifolii* var. β. var. ejus δ nostra *F. membranifolii*, var. δ. et var. ejus ε mox sub *F. mammilloso* citata reperietur.

‡ Quatuor in Esperii tabulâ delineantur stirpes, e quibus tres modò hic citavi: quarta est *F. ceranoides* Wulfenianus, depictus ad exemplar ab ipso reverendissimo auctore communicatum. Hæc, quam a suo *F. ceranoide* discrepare monet Esperus, ad nostrum *F. bifidum* pertinet.

§ Broteri synonymon hic citavi, quia ipse nullus dubitare videtur quin Gmelini descriptio atque icon suæ sunt tribuendæ stirpi; nec tamen hoc obstitit quominus dubitationis signum subjicerem; sunt enim in descriptione specificâ quæ *F. crispo* Linneano non benè conveniunt: "F. fronde planâ, dichotomâ, integerrimâ, punctatâ, lanceolatâ; fructificationibus tuberculatis, bifidis, terminalibus."

|| Jamjam in opere suo, cui titulus *Archiv für die systematische Naturgeschichte*, p. 136, notaverat Weberus *F. foliiferum* Forskalei esse diversum a *Fuco* sic nominato Esperiano; dataque mihi est nuper facultas plantam Forskaleanam videndi, in quâ meum *F. æruginosum* agnosco: nomen igitur pristinum huic mox restituendum.

¶ De hac stirpe suâ Stackhousius in *Nereide Britannicâ* memorat esse eandem quam varietatem β dixerunt Goodenovius Woodwardiusque, in hoc autem certè fallitur.

F. lacerus. Ner. Brit. p. 50. t. 11.

F. polymorphus. LAMOUROUX, Diss. p. 1. t. 13. f. 29, 30. t. 14. f. 31. t. 15. f. 33.

9. *Sarniensis*; fronde coriaceo-cartilagineâ; ramis hinc sub-canaliculatis, sursum versus dilatatis, apice rotundatis emarginatis.

F. crispus. 9. Syn. Fuc. p. 228.

F. polymorphus. LAMOUROUX, Diss. p. 1. t. 1. f. 1, 2. t. 2. f. 3, 4. t. 3. f. 5, 6, 7. t. 8. f. 20. t. 12. f. 27.

10. *planus*; fronde sub-coriaceâ, planâ, latâ; ramis linearibus, apice obtusis.

F. crispus. 10. Syn. Fuc. II. p. 228.

F. polymorphus. LAMOUROUX, Diss. Fuc. p. 1. t. 10. f. 23, 24.

11. *geniculatus*; fronde cartilagineâ, compressâ; ramis sub-linearibus: tuberculis subglobosis, nigris; fronde ad tubercula geniculatâ sæpiusque diffractâ.

HABITANT α et δ in Europæ littoribus ferè omnibus, ab Hispaniâ usque ad Lapponiam, satis vulgares; reliquæ varietates minùs frequentèr occurrunt: β , 9, 11, et 12 in Galliæ oris detexit Lamourouxius.— β in Devoniâ et Dorsetiâ.—In littoribus Hibernicis prope Belfast, unâ cum var. ϵ . D. Templeton.— γ præ cæteris in mari Lapponico vulgaris. Wahlenberg.—In Britanniæ oris occidentalibus.— ϵ et 11 apud Lyme Regis in Dorsetiâ.— ζ in Devoniâ.—12 in Devoniâ et Cornubiâ.—9 in Devoniâ. Dna. Griffiths.—Ex insulâ Sarniâ missam accepi.—, in Hiberniâ, prope Balbriggan. D. Scott.—In Lusitaniæ oris, circa Durium flumen.

Perennis. A Septembri ad Maium.

RADIX callus expansus, discoideus, albicans.

FRONDES ex eâdem basi plurimæ, ortu angustissimæ atque e tereti compressæ, statim verò sese dilatantes et nec mora planæ factæ, exinde sensim latitudine auctæ ut priusquàm ad pollicis sesquipollicisve altitudinem attigerint tres quatuorve lineas sint latæ; ad tale circitèr spatium plerumque indivisæ assurgunt, atque ibi fiunt bifurcæ, furcarum sinibus obtusis, segmentis sub-linearibus, vel sursum versus aliquantùm dilatatis, quæ postea intervallis brevissimis dichotomè palmatimve iterùm atque iterùm finduntur, utrâque segmentorum serie subjacentibus angustiore, ut summa vix duas lineas latitudine æquent; hæc, quæ numerosissima sunt, efficiunt, ut Gmelini verbis utar, ut rami simul sumpti corymbum optimè repræsentent: tota stirps circitèr tres pollices est longa; rarè ad quinque producitur; nervo venisque prorsus caret; apices bifidi segmentis abbreviatis, patenti-divaricatis, rotundatis, obtusis, haud ita tamen constantèr ut non plerumque adsit unus atque alter elongatus acutiusculusque; margines integerrimi, nudi, aut, quòd rariùs evenit, surculis frondem primariam figurâ et divisurâ referentibus sed vix unguem longis et vix lineam latis sparsim proliferi: habitus, præsertim apices versus, mirè crispus atque contortus, unde fit ut plantæ recentis in littore projectæ peripheria sit subrotunda; partes frondis latissimæ non rarè centro depressæ et marginibus elevatae conspiciuntur, canaliculatam speciem quandam præ se ferentes, haud eâ tamen certâ ratione quæ in *F. mammilloso* est notabilis.

FRUCTIFICATIO tubercula elliptica, hinc convexa, illinc concava, *Cannabis sativæ* seminibus paullò minora, copiosè per frondem et præcipuè per ramos superiores absque normâ sparsa, sex aut septem sæpe in singulis, omnia solitaria, in ipsâ frondis substantiâ immersa, dilutè rosea aut fuscilla, intùs seminum roseorum minutissimorum diaphanorum enormitèr sphaericorum congerie repleta, extrinsecùs poris nullis pertusa, neque unquam, quod vidi, ullo modo dehiscentia, sed tota maturitate marcescentia et excidentia, frondem uille foraminibus pertusam relinquentia.

COLOR intensè fusco-purpurascens, nitoris nequaquàm expers, subdiaphanus, per desiccationem ferè nigricans, nisi luci objectus observetur; sin in aquâ dulci diutius æquo servetur aut soli iunium exponatur, in virescentem transit et demùm fit albus.

SUBSTANTIA tenuis, attamen cartilaginea, lenta, et tenax; *exsiccatæ* ad corneam accedens.

OBS. Omne ferè illud quod suprâ de hac stirpe dixi, de primâ modò est accipiendum varietate, quæ, secundum herbarium Linnæanum iconemque Gmelinianam, est ipse horum auctorum *F. crispus* *F. ceranoidesque*. Voluissem potiùs, Gmelini more, talem primitus descriptionem comparavisse quæ cunctis hujus speciei varietatibus conveniret; sed vix aut ne vix talis effici potuit; nihil enim est in *F. crispo* fixum, nihil non mutationibus spem omnem fallentibus obnoxium, ut limes singulis varietatibus ægrè ponatur, et rarè duo reperiantur exemplaria omnibus numeris inter se convenientia. Quòd cunctæ autem *F. crispæ* formæ ab uno eodemque individuo ortum ducant neque sint in diversas dispertiendæ species, probant nexus illi summoperè tenues qui sub oculorum sensus non cadunt; dum, contrâ, inter maximam et minimam, angustissimam et latissimam, planam et teretiunculam tanta est dissimilitudo, ut quivis Botanicus, extremis modò visis, Algarum licet cæteroquin peritus, proculdubio falleretur.

Var. β ejusdem ferè est cum α magnitudinis aut paulò major, eundemque habet crescendi modum, sed color sæpiùs dilutè viridis, qualis pomorum, et, quod maximè valet, raniorum apices habet insignitè attenuatos, segmentis extremis erecto-patentibus, acuminatis, et propemodùm subulatis.

In varietate γ quoque frons, sicut in α , est ortu dilatata cuneiformisque, sed ad summities propemodùm ipsas indivisa assurgit, atque ibi segmentis numerosissimis angustis perbrevis est obsita; tota planta vix bipollicaris est, colore dilutè fuscello viridi perfuso;—hæc varietas, cui apices stellati characterem essentialem præstant, quoad crescendi modum magis reliquis ludit, et nunc ad α , nunc ad β , aut etiam ad δ accedit.

δ est crassiuscula atque compressa, nec plana, atque a basi usque ad apices latitudinem ubique æqualem et ubique duarum ferè linearum servat: ad septem et ultrà pollicum altitudinem assurgit; indivisa ad tertiam, et mox sæpe dichotoma intervallo inter singulas furcas sub-unguiculari, attamen incerto, segmentis patentibus; apicibus acutiusculis: color huic fuscus; sed marcescens fit amœnissimè viridis, aut dilutè roseus, violarumque odorem spirat:—nihil in hæc aut in reliquis varietatibus crispi contortive, ut nomen specificum *F. crispus* ipsi modò congruat.

neque plana est, neque compressa, sed teretiuscula, et angustior præcedente, quam colore formâ et crescendi modo refert: rami huic omnes lineares; dichotomiarum anguli acuti; apices pollicem ferè longi, subulati.

In ζ iterùm ad varietates quarum frondes planæ membranaceo-cartilagineæ redimus: hæc colore, habitu, mole, et crescendi modo cum δ convenit; sed substantiâ, uti jam diximus, tenui et fronde longitudinalitè canaliculatâ est prædita: differt insupèr dichotomiarum angulis patenti-divaricatis apicibusque obtusis rotundatisque.

Frondis substantia in η mutationibus est obnoxia, nunc crassa cartilaginea, qualis ea varietatis δ , nunc ad membranaceam ferè accedens: utriusque frons certo ordine est dichotoma, et est linearis donec apicibus proximè accedit, ubi derepente finditur in segmenta reliquis triplò quadruplòve angustiora, teretiuscula, sæpiùs divaricato-reflexa, unguem circiter longa, hæc simplicia, illa bifurca aut dichotoma: colore quoque ludit viridi-fusco aut purpurascente.

Ex omnibus *F. crispus* varietatibus θ est longè pulcherrima, colore gaudens saturatè castaneo, nitido, subdiaphano, apices versus dilutiore, et ibi roseo perfuso; substantia cartilagineo-membranacea; frons palmaris, ad dimidium circiter altitudinem indivisa assurgit, ortu angusta atque compressa, mox sensim, sed lenissimè, dum simplex manet, dilatata, ita tamen ut ubi latissima est vix tres lineas diametro æquet; postea dichotomiis sæpe repetitis fit ramosa, segmentis hinc aliquantùm canaliculatis, linearibus, intervallo inter singulas furcas brevissimo, angulis patentibus rotundatis, ut totius plantæ explanatæ et chartæ appressæ peripheria circuli dimidium ferè referat: apices abbreviati, rotundato-truncati, emarginati.

Primum locum inter hujusce speciei varietates, quem θ pro pulchritudine, ι pro mole sibi vindicat, inter reliquas gigas; quod forsàn illinc evenit quia maria magis australia incolit:—frons huic semipedalis, ab ipso ortu plana, sensim ad apices usque dilatata, plerumque unguem lata sed hinc illic interdum juxta dichotomias pollicem æquans: ad medium et ultrà indivisa assurgit, postea bis terve dichotoma segmentis erectis, apicibus abbreviatis rotundatis: substantia crassa et subcoriacea: color intensè fuscus, per desiccationem nigricans, marcescentis lividus purpurascensve.

Hactenùs de varietatibus in *Fucorum Britannicorum Synopsi* descriptis, quibus unam modò hic adjungo, quæ fronde cartilagineâ compressâ ramis linearibus colore et crescendi modo cum *var. ι* convenit, aut potiùs inter δ et ι est quasi media; sed discrepat ab omnibus aliis quod tubercula habeat nigricantia subglobosa vix in fronde immersa sed ramorum ad margines sessilia, substantiæ ita duræ et rigidæ ut frons ubicunque hæc sunt sita insignitè geniculata sit et sæpe diffracta, videaturque quasi fructum habeat verè terminalem.—Hujus varietatis unum exemplar D. Sowerby et ipse legimus A. D. MDCCXCIX in littore prope Lyme Regis, sed pro lusu naturæ, quod aiunt, habuimus; tribus autem post annis multa talia a D. Pigott accepi, et postea miserunt alii quoque Botanici.

Obs. Monendum est *F. crispus* varietates hinc ordine nequaquàm naturali disponi, sive frondis forma seu textura respiciatur: duæ tamen me moverunt causæ ut talem servarem; prima, quòd necesse fuerit primum assignare locum illi plantæ faciei quam Linnæus verum *F. crispum* dixit; altera, quòd jamjam in *Societatis Linnæanæ Actis* et in *Fucorum Britannicorum Synopsi* hoc modo sint dispositæ, quare mutatio aliqua ad synonyma commiscenda et multiplicanda multùm contulisset; malum in re botanicâ maximum et nunquam satis vitandum: forsàn autem rectiùs fecissem, si, utrâque harum causarum posthabita, alitèr in hoc opere posuissem et sicut in posterum rectiùs servabuntur; a latissimâ planâque varietate incipiens et sic ad angustissimam teretiusculam transiens: sic posita stabunt in eo qui sequitur ordo; ι , θ , α , γ , β , η , ζ , δ , κ , ϵ .

De historiâ *F. crispus* et de auctoribus qui illum memoraverunt tractaturus, injustum foret nisi ante alios omnes mentionem facerem clarissimi Botanici Gallici, Lamourouxii, qui in *Dissertationibus* jam sæpe in hoc opere laudatis quadringentas et ultrà iconas huic uni stirpi illustrandæ impendit, addito insupèr quicquid vel a suis ipse observationibus vel ab aliorum scriptis didicisse potuit, quo diversas facies stirpis formis diversissimis ludentis et synonymiæ dubiis vexatæ lucem infunderet. Nomen quoque plantæ specificum mutavit, summoque jure credens esse inter algas submersas nullam quæ Protei fabulosi metamorphoses magis imitaretur, *F. polymorphum* dixit; titulum sanè aptissimum Linnæanoque inepto longè præponendum; sed quem ego nihilominus repudiare cogor, nomina

semel imposita atque recepta nunquam cujusvis arbitrio varianda censens, ne magna aperiretur licentiæ porta, et, nominibus indies mutatis mutandisque, tantâ synonymorum mole res botanica obruta tandem penitus contegeretur. Neque etiam illi vel optimo Mertensio assentiri possum, dum *F. mammosus* *F. crispus* adjungere pergunt. Haudquaquam me fallit quanta inter utrumque similitudo interest, ut, fructificatione modò demptâ, cunctis ferè numeris conveniant. Sed nonne est fructificatio summi in plantis quibuslibet discriminandis momenti? Quid magis, quid tantum, valet? Quid certum si hæc incerta? Et hanc semper fixam, nec unquam ita ludere ut scrupulos injiceret, vidi, in speciminibus *F. crispus* atque *F. mammosus* quæ contuli ferè innumeris, partim a me ipso lectis, partim ab aliis acceptis Botanicis, inter quos non defuerunt qui has plantas conjungendas existimantes specimina delecta quæ hanc sententiam firmarent miserunt. Inter synonyma a Lamourouxio citata *F. furcatus* Esperianus videtur mihi dubius; persuadere enim mihi nequeo quin auctor clarissimus cum Fucum suum tenuissimum roseumque diceret quendam a *F. crispus* diversum ante oculos habuerit. Icon tamen ejus varietati nostræ ζ haud ita malè congruit. De hac, quam pro specie distinctâ sub *F. patens* nomine descripserunt Goodenovius Woodwardiusque, ab his doctissimis amicissimisque Botanicis dissentire cogor, qualem semper invitus, hic invitissimus, sententiam profero. Hos enim sum secutus in dispositione characteribusque plurimarum e varietatibus suprâ recensitis, et horum primorum operâ est factum quòd *F. crispus* bene innotuerit. Nequeo tamen cum his facere, quamvis forsitan ita agens Jove judicarem æquo, divellentibus propter frondem hujus canaliculatam *F. patens* ab *F. crispus*; plantæ enim in reliquis conveniunt et in memoriâ sempiternâ est habendum ipsorum de *F. crispus* naturâ mutabili dictum, quòd “usque addeò quod tangit idem est.” Frondis hanc formam canaliculatam non nisi fortuitam esse censuerunt multi, et ab eo modò pendere, quòd specimina minùs cautè desiccata fuerint, satis ponderis ad comprimendum non adhibito. Hi verò certè in errore versantur; dubio enim nullus datur locus quin in *F. patens* et *F. mammosus* Goodenovianis talis forma ipsi plantarum indoli sit insita; quamvis causa jam dicta eandem sæpe figuram in aliis inducit. Si qua demùm sit e varietatibus quæ verè specificè distinguitur, talem crederem *F. filiformem* Hudsoni, cujus exemplar aliquot ante annis accepi, quod ipse *Floræ Anglicæ* auctor viro reverendo, H. Davies, dederat. Hinc licuit in *Fucorum Britannicorum Synopsi* de stirpe dudum incertissimâ fidenter loqui. Hujus semina, postquàm capsulæ deciderant effectæ, frondi nuda adhærere vidi, quod in nullâ aliâ e *F. crispus* varietatibus observatum est, neque aliquis facilè idem speraret de Fuco tali substantiâ prædito. Habitu quoque gaudet dissimillimo, qualis Sowerbeium et me ipsum addeò decepit, quum primùm exemplaria recentia in littore prope Lyme Regis projecta vidimus, ut dubitaverimus annon *Fuci lumbricæ* specimina solito crassiora fuerint; quæ quantum stirpes inter se discrepant nemo ignorat Algologus. Frons *F. crispus* vegeti rupibus adhuc nativis affixi coloribus pulcherrimè prismaticis radiare solet, et eorundem etiam reliquias plantæ non defuerunt, quum per duos annos exsiccata aquâ rursus immersi. Declarat hujus Fuci historia, quam maxima synonymorum confusio ubique circumcingit, quatenus error menti semel infixus viros doctissimos de certo tramite palantes ducet; omnes enim ante *Societatis Linnæanæ Acta* edita auctores persuasum sibi habuerant hunc esse verum *F. ceratoidem* Linnæi: ex quo factum est, nemine dubitante, ingentem sub hoc nomine undequaque esse comparatam Fucorum molem neque sibimet ipsis congruentium nec respondentium descriptioni in *Speciebus Plantarum* traditæ. Nullibi hic error ita longè processit ac in Florâ Anglicâ, ubi, quod mireris, *F. inflatus* pro varietate *F. crispus* adjungitur; faustum id sanè quòd non et *F. vesiculosus* associaverit. Sed ne nos nimium jactemus; nisi enim, Herbario Linnæano in Angliam invecto, Britannicis concessa fuerit facultas hunc ditissimum adeundi thesaurum, nos forsitan in similibus jam nunc versaremur tenebris, aut saltem inter dubitationum ambages erraremus. Quis enim in hac nostrâ stirpe agnoscere posset stirpem a Linnæo in *Mantissâ* sub *F. crispus* nomine designatam? Præsertim cum descriptio sit perbrevis videaturque summus auctor multum inniti velle Morisoni iconi (t. 8. f. 6.) quæ nec ipsam hanc plantam nec ullam e varietatibus repræsentat. Certus *F. crispus* character in tuberculis fructiferis reperitur, quæ figuræ orbicularis hinc convexa illinc concava in ipsâ frondis substantiâ sunt immersa et matura excidunt frondem pertusam relinquentia. Hæc ego sæpe dissecui tubercula, ut in eorum inquirerem indolem; sperans me sic demùm aliquid esse reperturum quod duceret ut Stackhousio assentirer novum ex *F. crispus* constituenti genus, quod *Chondrum* appellat: semper frustrâ. *F. crispus*, ut jam sub *F. tenace* memoratur, et pariter *F. mammosus* in aquâ cocti liquefiunt refrigeratique in gelatinam solidam rigent; quam ego gelatinam mox per virorum acutorum peritiam artibus inservituram spero, quamvis mihi tale tentanti omnia hactenus irrita cesserunt experimenta.

Tab. 216.

- a. *F. crispus*, magn. nat.
- b. *frondis pars, cum tuberculo*, magn. auct. 6.
- c. *idem dissectum* - - - - 4.
- d. *semina* - - - - 1.
- e. *var. ι*, magn. nat.

Tab. 217.

- a. *var. ζ*, magn. nat.
- b. *var. θ*.
- c. *var. δ*.
- d. *var. ε*.
- e. *var. κ*.

Fucus crispus, frond cartilaginous, flat, nerveless, dichotomous, entire at the margins, curled, segments sub-cuneiform, the uppermost narrowest: tubercles roundish, solitary, scattered, immersed in the substance of the frond, concave on one side, deciduous.

Fucus crispus. LINN. *Mant.* p. 134. (excl. syn. Moris.) *Syst. Nat.* II. p. 718. *Syst. Nat. ed. Gmel.* II. p. 1387. *Fl. Norv.* II. p. 91. *Linn. Trans.* III. p. 169. WITH. IV. p. 106. *Syn. Fuc.* II. p. 226. CLEMENTE, p. 313. WAHLENB. *Fl. Lapp.* p. 497.

F. ceranoides. GMELIN, *Hist. Fuc.* p. 115. t. 7. f. 1. (excluso hic et ubique synonymo Linnæano.) * *Fl. Ang.* p. 582. † *Fl. Scot.* p. 913. ROTH, *Fl. Germ.* III. p. 450. ESPER, *Ic. Fuc.* I. p. 143. t. 98. ‡ f. 1. 2. 3. *Fl. Ped.* II. p. 330. § *Fl. Lus.* II. p. 435?

F. membranifolius. WITH. IV. p. 106.

F. polymorphus. LAMOUROUX, *Diss.* (excl. syn. plur.) p. 1. t. 4. f. 8. t. 5. f. 10. 11.

F. membranaceus ceranoides variè dissectus. RAII *Syn.* p. 44. n. 16.

F. membranaceus ceranoides ramosus per siccitatem obsolete virescens. RAII *Syn.* p. 44. n. 17.

Ulva crispa. *Fl. Fr. Ed. 2da.* II. p. 13. (excl. var. ♂ ad *F. mammosum* pertinente.)

β. *virens*; frond sub-membranaceous, branches dilated upwards, flattish, extreme segments long and acuminate.

F. crispus. β. *Linn. Trans.* III. p. 169. *Syn. Fuc.* II. p. 226.

F. polymorphus. LAMOUROUX, *Diss.* p. 1. t. 16. f. 35.

γ. *stellatus*; frond sub-membranaceous; branches dilated upwards, divided at their apices into very numerous clustered shortish laciniae.

F. crispus. γ. *Linn. Trans.* III. p. 169. *Syn. Fuc.* II. p. 226.

F. stellatus. *Ner. Brit.* p. 53. t. 12.

F. pusillus. ESPER, *Ic. Fuc.* II. p. 67. t. 142.

δ. *aqualis*; frond cartilaginous, thick; all the branches equal and linear, the extreme segments obtuse.

F. crispus. δ. *Linn. Trans.* III. p. 169. *Syn. Fuc.* II. p. 227.

F. foliifer. ESPER, *Ic. Fuc.* I. p. 106. t. 52. (||excl. syn. Forsk.)

F. crispatus. *Fl. Dan.* t. 826.

¶ *F. crispus*. *Ner. Brit.* p. 63. t. 12. *Eng. Bot.* XXXII. t. 2285.

F. crispus. var. ESPER, *Ic. Fuc.* II. p. 69. t. 144. and t. 144. A.

F. polymorphus. LAMOUROUX, *Diss.* p. 1. t. 8. f. 16. t. 9. f. 22.

F. dichotomus membranaceus e viridi flavescens, angulos rotundiusculos efformans. MORIS. *Hist. Plant. Ox.* III. p. 646. s. 15. t. 8. f. 11.

ε. *filiformis*; frond cartilaginous, sub-cylindrical; branches nearly linear; apices long and acuminate.

F. crispus. ε. *Linn. Trans.* III. p. 169. *Syn. Fuc.* II. p. 227.

F. filiformis. *Fl. Ang.* p. 585.

F. ceranoides. var. GMELIN, *Hist. Fuc.* p. 115. t. 7. f. 3.

F. ceranoides albidus ramulorum apicibus stellatis. RAII *Syn.* p. 44. n. 18.

ζ. *patens*; frond sub-cartilaginous, channelled on one side, dichotomous; angles of the dichotomies patent.

F. crispus. ζ. *Syn. Fuc.* II. p. 227.

F. patens. *Linn. Trans.* III. p. 173.

F. polymorphus. LAMOUROUX, *Diss.* p. 1. t. 6. f. 12, 13. t. 8. f. 17. t. 12. f. 28.

* Of the varieties of *F. crispus* enumerated by Hudson, only the α, β, and δ really belong to *F. crispus*: his var. γ is already referred to in this work under *F. membranifolius*.

† It is plain that Lightfoot, like Hudson, confounded several different species with *F. crispus*: his var. γ is our *F. membranifolius* β; his δ, our *F. membranifolius* δ; and his ε belongs to *F. mammosus*, under which it will be quoted.

‡ In Esper's plate there are four plants figured, of which I have here referred only to three; the fourth is the *F. ceranoides* of Wulfen, drawn from a specimen communicated by the learned Abbot himself, nor does Esper fail to observe of it, that it differs from his plant of the same name. It belongs to our *F. bifidus*.

§ I have been induced here to introduce the synonym of Brotero, because that author himself appears to feel no doubt but that both the figure and description of Gmelin belongs to the Portuguese *F. ceranoides*. I could not, however, avoid subjoining a mark of doubt to the reference; for in the specific character, which I here subjoin, there are more than one thing which do not agree with the Linnæan *F. crispus*. "F. fronde planâ, dichotomâ, integerrimâ, punctatâ, lanceolatâ; fructificationibus tuberculatis, bifidis, terminalibus."

¶ Dr. Weber, in his *Archiv für die systematische Naturgeschichte*, remarked many years since that the *F. foliifer* of Forskal was different from what Dr. Esper had called by the same name; an observation which I have lately had an opportunity of confirming by the examination of a specimen from Forskal's own herbarium, in which I recognize my *F. aruginosus*. This latter plant must consequently resume its original name.

¶ On the subject of this figure Mr. Stackhouse says in his *Nereis Britannica* that it belongs to the var. β of Dr. Goodenough and Mr. Woodward, but I venture to differ from him and refer it to the δ.



Fucus crispus.





Fucus crispus.

7. *lacerus*; frond cartilaginous, compressed; apices very narrow, elongated, branched.
F. crispus. 7. *Syn. Fuc. II.* p. 227.
F. lacerus. *Ner. Brit.* p. 50. t. 11.
F. polymorphus. LAMOUROUX, *Diss.* p. 1. t. 13. f. 29, 30. t. 14. f. 31. t. 15. f. 33.
9. *Sarniensis*; frond between coriaceous and cartilaginous; branches slightly channelled on one side, dilated upwards; apices rounded and emarginate.
F. crispus. 9. *Syn. Fuc. II.* p. 228.
F. polymorphus. LAMOUROUX, *Diss.* p. 1. t. 1. f. 1, 2. t. 2. f. 3, 4. t. 3. f. 5, 6, 7. t. 8. f. 20. t. 12. f. 27.
1. *planus*; frond sub-coriaceous, flat, wide; branches linear, apices obtuse.
F. crispus. 1. *Syn. Fuc. II.* p. 228.
F. polymorphus. LAMOUROUX, *Diss. Fuc.* p. 1. t. 10. f. 23, 24.
8. *geniculatus*; frond cartilaginous, compressed, branches nearly linear: tubercles subglobose, black; frond bent, and often broken at the tubercles.

The first and third varieties are common on almost all the European shores from Gibraltar to the North Cape: the others are of less frequent occurrence.— β , ζ , 7, 9, and 1, in France. *Lamouroux*.— β in Devonshire and Dorsetshire.—On the shores of Belfast Lough, together with 8. *Mr. Templeton*.— γ most common of all in Lapland. *Wahlenberg*.—On the western coast of Britain.—8 and 8 at Lyme Regis, in Dorsetshire.— ζ in Devonshire.—7 Devonshire and Cornwall.—9 Devonshire. *Mrs. Griffiths*.—Sent to me from Guernsey, where it abounds.—1 Irish coast about Balbriggan. *Dr. Scott*.—At Oporto.

Perennial.—September.—May.

ROOT, an expanded, whitish, callous disk.

FRONDS, many from the same base, exceedingly narrow and between compressed and cylindrical at their origin, but immediately widening and becoming flat, after which they gradually increase in width so as to equal three or four lines before they have reached the height of more than an inch or an inch and half, to about which distance they generally rise simple, and there become forked, with the angles of the divisions patent, the segments either nearly linear or somewhat dilated upwards; these afterwards are repeatedly cleft in a dichotomous or irregularly palmate manner at exceedingly short intervals, each series of segments being more narrow than those below them, so that the extreme ones, which, to use the words of Gmelin, from their great number cause the ends of the branches to look like a corymbus, are scarcely two lines in width: the whole plant is about three inches long, though sometimes, but rarely, it extends to five; it is everywhere destitute of veins or midrib; the apices are bifid, with short, subdivaricated, rounded and obtuse segments, among which, however, it generally happens that one or two are found lengthened out and sharpish; the margins are quite entire, mostly naked, but occasionally here and there proliferous with a few shoots which in figure and mode of branching resemble the main frond, but scarcely exceed half an inch in length or a line in width; the habit of the plant, especially towards the apices, is remarkably curled and twisted, so that specimens thrown fresh upon the beach take nearly a globular form; the wider parts of the frond are not uncommonly depressed at their centre and elevated at the margins, thus assuming a sort of channelled appearance, but by no means so regularly as is observable in *F. mammillosus*.

FRUCTIFICATION, elliptical *tubercles* convex on the one side, concave on the other, but little smaller than hemp-seed, plentifully scattered without any order about the frond, particularly the upper branches, six or seven often on each, all solitary, immersed in the substance of the frond, of a pale pink or brownish color, filled with a mass of extremely minute roundish transparent pink seeds, perforated externally with no pores, nor ever, as far as I have seen, in any way gaping, but at maturity decaying and falling out entire, thus leaving the frond full of innumerable holes.

COLOR, a deep glossy purplish brown, semitransparent, looking almost black when dry, unless held to the light, but turning to a pale green and finally to white, if kept too long in fresh water or exposed to the sun.

SUBSTANCE, thin, between membranaceous and cartilaginous, flexible and tough: in a dry state almost horny.

OBS. A great part of what has just been written of this *Fucus* is to be considered only as applicable to the first variety, which, according to the Linnean Herbarium and Gmelin's description, is the true plant designed under the names of *F. crispus* and *F. ceranoides*. I should greatly have preferred, following the example of Gmelin, to have given in the first instance a description applicable to all the varieties of this species; but I found it absolutely out of my power to write such an one; for there appears to be nothing connected with the plant which is not subject to the

most extraordinary and the most unlooked for changes. At the same time there cannot be the least doubt but that all the different forms of *F. crispus* are derived from one common origin; and, so far from its being possible to divide them into several species, there is scarcely any limit to be placed to the varieties, nor can two* specimens easily be picked up which entirely agree together; though any botanist, however conversant with the study of the Algæ in general, would unquestionably be led into error, if called upon to form an opinion from only two individuals of *F. crispus*, and those the most dissimilar that can be found.

The variety β is nearly of the same size as α or a little larger, and has the same mode of growth; but its color is a pale apple-green, and, what is the strongest character, the ends of its branches are remarkably attenuated, the extreme segments being erecto-patent, and so much acuminate as to be almost subulate.

In γ also, as in α , the frond is dilated near its origin and is cuneiform, but it proceeds undivided almost to the extremities, and is there beset with a great profusion of very short narrow segments: the whole plant is scarcely two inches long; its color a pale brown tinged with green:—this variety, which is distinguished by its stellated tips, is in its mode of growth more sportive than the rest; sometimes approaching to α , and sometimes to δ , or even to δ .

δ is thickish and rather compressed than flat, preserving from top to bottom an everywhere equal width of about two lines: it rises to the height of seven inches or more, continuing undivided for about the first three, and afterwards repeatedly dichotomous with intervals of nearly half an inch between each division: the segments are patent: the apices rather sharp: the color brown, but turning in decay to a very pleasing green, or a pale pink: the whole plant has also at that time a very strong smell of violets:—neither in this nor in any of the other varieties is there any thing curled or twisted to warrant the specific name, which is applicable only to the original plant.

ϵ is neither flat, nor compressed, but subcylindrical, and more narrow than δ , with which it accords in shape, color, and mode of growth: all its branches are linear: the angles of the dichotomies acute; the extreme segments nearly an inch long and subulate.

In ζ we again return to those varieties of which the fronds are flat and of a substance between cartilaginous and membranaceous: this also in color, habit, size, and mode of growth agrees with δ , but differs from it in its substance, which, as we have just observed, is thin; in having its frond longitudinally channelled; and in the angles of its dichotomies being patent and divaricated and the apices blunt and rounded.

The substance of the frond in η is liable to considerable changes; being in some specimens thick and cartilaginous like that of δ , in others inclining to membranaceous: in both cases it is regularly dichotomous, and continues linear till it comes very near the extremities, where it is suddenly cleft into subcylindrical segments thrice or four times more narrow than the rest, generally divaricated or inclining to be reflexed, about half an inch long, some simple, others forked or dichotomous: its color likewise varies from greenish brown to purplish.

Of all the varieties of *F. crispus* θ is by far the handsomest, being of a deep rich glossy semitransparent chesnut color, which towards the ends becomes paler and there acquires a tinge of pink: its substance is between cartilaginous and membranaceous; its length near four inches; for the half of which it rises undivided, narrow and compressed at its origin, but continuing gradually to expand while it remains simple, though so slowly that its diameter in the thickest part scarcely equals three lines: it is afterwards repeatedly dichotomous, with linear segments slightly channelled on one side, the interval between each division being very short, the angles patent and rounded, so that the outline of the plant when dried and pressed to paper is the segment of a circle: the apices are short, between rounded and truncate, and emarginate.

The same rank among the varieties of this species which θ holds for its beauty is due to ι for its size, which is very great compared to that of the rest. This is perhaps attributable to its growing in more southern latitudes; the largest specimens that I have seen of it having been brought from Spain, whereas, on the contrary, I never saw any individual of *F. crispus* so small as those produced upon the shores of Lapland. The frond of this variety is half a foot or more in length, and is flat from its very origin, whence it gradually enlarges upwards: in its widest parts it is mostly about half an inch wide, but sometimes equals an inch near the dichotomies. It rises for more than half its height undivided, and is afterwards not more than twice or thrice dichotomous, with erect segments and short rounded apices: its substance is thick and inclining to coriaceous: its color a deep dull brown, looking black when dry, and turning in decay to livid or purplish.

I now come to my variety κ , the only one which I purpose here describing in addition to those already enumerated in the *Synopsis of the British Fuci*. This, by its cartilaginous compressed frond, its linear branches, its color and its mode of growth, agrees with ϵ , or rather is intermediate between that and δ ; but differs, as well from these as from all the other varieties, in bearing its fruit in blackish subglobose tubercles, which are scarcely imbedded in the substance of the frond, but sessile on the sides of the branches, and are of so hard and rigid a texture that, wherever

* In confirmation of this opinion I quote the following extract from a letter from my excellent correspondent, Mrs. Griffiths, on this subject, "Of *F. crispus* every pool upon the Devonshire coast produces a dissimilar sort, and where there is any mixture of fresh water the varieties are monstrous as well as endless."

they occur, the frond is bent back and not uncommonly broken off, having the appearance of bearing really terminal fruit:—Of this variety Mr. Sowerby and myself gathered a single specimen upon the beach at Lyme Regis in the summer of 1799, but laid it aside regarding it as merely accidental, in which light it is mentioned in the *Synopsis of the British Fuci*, nor should I ever have ventured upon taking farther notice of it, had not Mr. Pigott three years afterwards sent me a considerable supply of it and called my attention particularly to it.

OBS. I am well aware that the arrangement of the varieties of *F. crispus* here given is by no means a natural one; but I have, nevertheless, been induced by two reasons to preserve it, the first, because it was necessary to keep the appearance of the plant described by Linnæus as the original species; the second, because, as they had twice been placed in this order, any change would have introduced a confusion of synonymy, an evil always greatly to be deprecated: yet, still, I am not sure that I should not have done better by overlooking both these considerations, and proceeding gradually from the widest to the most narrow form of the frond. Whoever may wish to do so will place them in the following order: ι , ϑ , α , γ , ζ , η , δ , κ , ϵ .

It would be doing an injustice to the learned French Botanist, M. Lamouroux, and making an ill return for the exceeding pains which he has taken to throw all possible light upon the history and the varieties of *F. crispus*, were I to begin my account of this species otherwise than by acknowledging how much he has effected towards rendering it well understood. To this purpose he has devoted no fewer than * 41 figures, and has bestowed scarcely less labour upon his description, so that the examination of both the one and the other is requisite for every naturalist who wishes to form an idea of the variations of this marine Proteus. The name by which he has called it, *F. polymorphus*, is so highly apposite that I am sorry to say I do not feel myself at liberty to follow his example, and reject the original, though infinitely less appropriate, appellation given it by Linnæus. Neither can I agree with him and with my friend, Professor Mertens, in uniting *F. crispus* and *F. mammillosus*. I am well aware how nearly the two plants are allied, and, I might almost say, how exactly they agree in every particular excepting their fructification; but surely this one circumstance is sufficient to keep them perfectly distinct; as in the almost infinite number of specimens which I have examined, whether found by myself or communicated by other botanists, some of whom were desirous to prove them the same, I never could trace any variation on this point, sufficient to admit of a doubt to which any individual belonged. It appears to me also, that M. Lamouroux is wrong in referring to *F. crispus* the *F. furcatus* of Esper, t. 95, though the figure is such, as might easily be supposed to belong to our var. ζ , the *F. patens* of Dr. Goodenough and Mr. Woodward. From these able botanists, whom I have followed above in the principal varieties of this species, and whose merit, in being the first properly to elucidate it, cannot be denied, I have differed with regard to this appearance, looking upon the channelled stem, on which rests its principal claim to be regarded as a distinct species, as not in itself sufficient to allow it to rank as such; when it is considered how nearly it is in all other respects allied to a plant, of which they have themselves no less justly than emphatically said that "quod tangit idem est." With regard to this channelled form of the frond I must be allowed here to say that it is really founded in nature, nor can any error be greater than that of those who look upon it as having no existence in the plants when recent, and as depending only upon the mode of drying them; but a want of care in this latter circumstance certainly in some cases gives the same appearance. If any of the varieties be really distinct species, I must own I should suppose it to be Hudson's *F. filiformis*, an authentic specimen of which, from the author of the *Flora Anglica* himself, was communicated to me by the Rev. H. Davies, so that I have no difficulty in pronouncing upon this long doubtful plant. In this there is one peculiarity that it would be wrong to pass over unnoticed, that the seeds, after the decay of the capsules, adhere to the surface of the frond, which does not appear to be the case with any

* To quote the whole of these above was impossible; for, as has been already remarked, the plant changes so much that almost every specimen makes a separate variety. Hence I can scarcely say that even those to which I have referred belong properly to the varieties that they stand under. M. Lamouroux divides the plant into four series, as follows:

I^{ma} SERIES.

"Frondes latæ, generatim ramosissimæ, ramorum segmenta brevissima, extremitates ramorum eademque brevissimæ; tubercula in frondis parte mediâ sparsa, illius substantiæ innata.

II^{da} SERIES.

Frondes angustæ, sublineares, sæpe canaliculatæ, parum ramosæ.

III^a SERIES.

Deltoidei rami, plus minusve lati, extremitatibus subacutis, modò brevibus, modò longissimis, itemque ramosis; tuberculis ovatis in ramis superioribus, sæpe in apicibus sitis.

IV^a SERIES.

Rami mammilliferi; mamillis tuberculis vel foliiformibus."

I need scarcely remark that this last division belongs to *F. mammillosus*. M. Lamouroux observes that the fronds of all vary in form.

other variety, and would scarcely be expected in a plant of a substance similar to that of *F. crispus*. Its habit is so dissimilar to that of all the other varieties, that, when Mr. Sowerby and myself found it lying upon the sandy beach at Lyme Regis, in June, 1799, we were unable to tell till we had picked it up, whether what we saw was more than an unusually thick specimen of *F. lumbricalis* in fruit, a deception, which, as we remarked at the time, we should have been unwilling to have believed possible on the faith of weaker evidence than that of our own eyes. *F. crispus*, when growing on its native rocks, gives out beautiful bright prismatic hues, which I have in some cases observed to be still visible when the plant was again immersed in water after having been long kept dried. The confusion of synonyms and the lengths to which authors will go when they have once made up their minds on a subject, are nowhere more conspicuous than in the history of this *Fucus*; all of them having taken it for granted that it was the *F. ceranoides* of Linnæus, and having, without giving themselves time to consider, brought together, as was observed in the *Linnæan Transactions*, "a strange mass of plants no one agreeing with the description of the *Species Plantarum* or consistent with its brethren." In no place is this so remarkable as in the *Flora Anglica*, where, by a singular stretch of imagination, even *F. inflatus* is considered a variety of it. At the same time, however, it must not be denied, that, but for the presence of the Linnæan Herbarium in England, we, even if we had been fortunate enough to escape this error, should hardly have recognized in our plant the *F. crispus* of the *Mantissa*, where the dependence seems principally to be placed on Morison's t. 8. f. 6, which never could have been intended to represent this species, and does not even accord with any of its varieties. The constant character of *F. crispus* depends upon the roundish tubercles, innate in the substance of the frond, concave on one side, and, when mature, deciduous, so as to leave cavities in the places which they occupied. This latter character is certainly a peculiar one, but in the structure of the tubercles I find nothing unlike those of other *Fuci*; still less, any thing so remarkable as to induce me to join my friend, Mr. Stackhouse, in forming from *F. crispus* a distinct genus. This species, as is observed under *F. tenax*, and *F. mammillosus*, melt on boiling and afterwards harden into a gelatine, which I do not despair of seeing hereafter employed to useful purposes, though I have hitherto failed in my endeavours to render it of service.

T. 216.

- a. *F. crispus*, natural size.
- b. part of the frond, with a tubercle, magnified - 6.
- c. section of the same - - - - 4.
- d. seeds - - - - - 1.
- e. var. ι , natural size.

T. 217.

- a. var. ζ , natural size.
- b. var. η .
- c. var. δ .
- d. var. ϵ .
- e. var. κ .

Fucus, fronde cartilagineâ, hinc canaliculatâ, enervi, dichotomâ, integerrimâ, elongato-cuneiformi, utrinque mammoso-tuberculiferâ, proliferâ: tuberculis sphæricis, sparsis, brevissimè pedunculatis.

Fucus mammillosus. Linn. Trans. III. p. 174. Syn. Fuc. II. p. 237. Eng. Bot. XV. t. 1054. (excl. syn. Raii.) ESPEr, Ic. Fuc. II. p. 21. f. 122.

F. canaliculatus. var. β. Fl. Ang. p. 583.

F. ceranoides. var. ε. Fl. Scot. II. p. 916.

F. ceranoides. var. δ. Gmelin, Hist. Fuc. p. 115.

F. ceranoides. With. IV. p. 99.

F. alveolatus. ESPEr, Ic. Fuc. I. p. 139. t. 70.

F. polymorphus. 4th series. Lamouroux, Diss. p. 3. t. 17. f. 37. t. 18. f. 38.

F. humilis dichotomus membranaceus ceranoides latioribus foliis ut plurimum verrucosis. MORIS. Hist. Plant.

Ox. III. p. 646. s. 15. t. 8. f. 13.

Ulva crispa. var. δ. Fl. Fr. Ed. 2da. II. p. 13.

β. *linearis*; fronde angustâ, lineari; apicibus obtusiusculis, emarginatis.

F. mammillosus. var. β. Linn. Trans. III. p. 174. Syn. Fuc. II. p. 237.

F. ceranoides. var. ζ. Fl. Scot. II. p. 917.

γ. *prolifer*; fronde disco margineque proliferâ; ligulis numerosissimis, confertis, oblongis, mammoso-tuberculiferis.

F. mammillosus. var. γ. Syn. Fuc. II. p. 237.

F. polymorphus. Lamouroux, Diss. t. 18. f. 40.

δ. *echinatus*; ramis sursum versus dilatatis, hinc subnudis.

F. mammillosus. var. δ. Syn. Fuc. II. p. 237.

F. echinatus. Ner. Brit. p. 65. t. 12.

F. polymorphus. Lamouroux, Diss. t. 18. f. 39.

ε. *incurvatus*; fronde sub-lineari; apicibus rotundatis: tuberculorum pedunculis incurvis.

F. mammillosus. var. ε. Syn. Fuc. II. p. 237.

HABITAT in australibus et occidentalibus Britanniae et Hiberniae oris.—In Scotiâ. Lightfoot.—In Galliae littoribus. Lamouroux.—E Lusitaniâ, juxta Durium flumen lectam accepi.—Omnes varietates in Devoniâ. Dna. Griffiths.

Perennis. Nov.—Jan.

RADIX callus exiguus, discoideus.

FRONDES ex eâdem basi plurimæ, longitudine tri-sexpollicari, ortu teretiusculæ, et pennâ vix crassiores passerinâ, mox, et quidem statim, compressæ, sensimque sese dilatantes, ut priusquàm ad unguis altitudinem perveniant jam planæ sint factæ et lineam latæ; hinc quoque sensim usque ad ipsos apices latitudine augeri pergunt, ita tamen lenitè ut ibi rarè quatuor lineas diametro exuperent; frons jam circitèr unguem aut pollicem alta bifurca fit, atque exinde sæpe eodem modo finditur, intervallo inter singulas furcas haudquaquàm certo, nunc pollicari, nunc duplò brevior; rami omnes patentes, aut patenti-divaricati; apices bifidi; angulorum sinubus rotundatis, segmentis longitudine variabilibus, his abbreviatis obtusis, illis longiusculis acutis, utrisque vel integris vel emarginatis, nec desunt quæ in acumen longum angustum subulatum producantur: talium omnium non rarè exempla in unâ eâdemque stirpe occurrunt: frondis margines semper integerrimi, nunc nudi, nunc, quod quidem sæpiùs est videre, sparsim proliferi processibus homogeneis, planis, tres quatuorve lineas longis, haud unam latis, ligulatis, simplicibus bifurcisque, variè contortis, qualium plerumque, nequaquàm verò semper, unus et alter ex ipsâ planâ frondis paginâ circa medium oritur; ramorum superiorum, præcipuè latissimorum, superficies prorsus plana est; ea verò angustiorum et caulis, si pars basi proxima tale meretur nomen, marginibus hinc elevatis et paullum inflexis est notabilis, ut frons ibi longitudinalitèr canaliculatâ appareat, quod magis in recente et madidâ quàm in exsiccâtâ valet.

FRUCTIFICATIO tubercula sphærica, intensè rubra aut subfusca, papaveris seminibus vix majora, copiosissimè per frondem, præsertim in ramis summis sparsa, utrique horum paginæ insidentia, et sæpe totos ferè occupantia, brevissimè pedunculata, vel, ut accuratiùs loquar, primùm in formâ ciliorum exiguum subulatum provenientia, quorum apices, progrediente ætate, in capsulas tumefacti mutantur; intus scatent seminibus subrotundis rubris densissimè constipatis, fibrarum brevium concolorum parallelarum simplicium serie circumcinctis: quædam etiam tubercula processibus ligulatis, sicut frondi primariæ, imponuntur; et aliquandò, sed perrarè, unum alterumque detexi

in ipsâ frondis substantiâ immersum, sed figuram molemque suetam servans, nec cum *F. crispî* fructu commiscendum.

COLOR intensè fuscus rubro vel purpurascens perfusus, apices versus dilutior, atque ibi sæpe amœnè roseus; ubique subdiaphanus, et interdum nitens quasi vernice obductus: *soli diu objectæ*, fit albus; et *marcescentis* in pallidè viridem mutatur.

SUBSTANTIA cartilaginea, et tenuis, attamen lenta, tenaxque.

Var. β frondem habet vix duas lineas latam, et ubique linearem, a basi ad summitates paritèr canaliculatam, ramorum apicibus ut plurimum abbreviatis, obtusiusculis, rotundatis, sed hoc incertum: color huic intensè fuscus; longitudo octo et ultra pollicum.

γ vix est tripollicaris, fronde elongato-cuneiformi, parcius quàm in reliquis divisâ, et sæpe tantummodò semel bifurca, sed copiosissimè juxta apices proliferâ processibus ligulatis subpollicaribus frondem primariam figurâ imitantibus: hujus varietatis exemplaria nonnulla, qualium unum *fig. nostra g* exhibet, *Fucum Brodiaei* multum referunt.

Frondis pars inferior in *varietate δ* latitudinem ubique ferè æqualem servat, ramis superioribus insignitèr cuneiformibus et sursum versus magis dilatatis quàm quod in varietatibus præcedentibus observatur: frons quoque plerumque uno tantum latere est mammillifera: longitudo huic tripollicaris: color qualis in *α*, sed interdum viridis; persuasum autem mihi habeo in errore versatum esse *Stackhousium*, quum colorem viridem similem ejus pomorum, hujus stirpis, quam speciem distinctam censuit, pro caractere essentiali habendum judicavit.

Var. ε, β instar, fronde prædita est angustâ, propemodum lineari, ab ortu usque ad apices canaliculatâ, haud quadripollicari: segmenta summa elongata sunt atque rotundata, et his solis insident tubercula, pedunculis fulta tres quatuorve lineas longis notabiliterque incurvis. Magna, quod mireris, inter hanc varietatem et *F. gartinum* primo aspectu similitudo interest.

OBS. Facile admodum fuisset descripsisse plures quàm quæ suprâ distinguuntur hujus Fuci varietates, et quidem totidem quot eas *F. crispî* numero adæquarent, aut etiam sub utrâque stirpe duplicatas exhibuisse; sed veritus sum ne hoc tentando difficultates adaugerem; tales enim sunt *F. mammilloso* varietates qualibus vix ulli statuendi sunt limites, et formarum modò discrepantiis niti cogimur, cum substantia omnibus sit eadem, nec a tenui ad crassam a membranaceâ ad coriaceam in diversis individuis ludat.

Duumviri jam sæpenumerò in hoc opere memorati, nec unquam satis laudibus ob merita in Fucos Britannicos nominandi, Goodenovius Woodwardiusque, primi *F. mammillosum* pro specie distinctâ descripserunt; adjecto simul optimè, errores qui diu de hâc stirpe invaluerunt inde ortum habuisse, quòd Linnæus sub *Fuco* suo *ceranoide* Morisoni iconem quæ *F. mammillosum* refert citaverit. Hæc autem icon per se certè bona neutiquàm suæ *F. ceranoidis* descriptioni convenit, quippe cui *apices vesiculosi* prorsus desunt. Auctores autem posterius magis figuræ a summo Suione citatæ quàm suis ipsius verbis innixi per ambages evagati sunt infinitas, et, quod secundum naturam evenit, planta ignota mansit. Hudsonus modò a reliquis dissentire est ausus, frondique longitudinaliter sulcatæ nimio plus confusus, *F. canaliculato* adjungendam censuit, de quo non necesse est ut his diebus plura dicamus; Algarum enim marinarum cognitio post *Floram Anglicam* editam longè processit. Satis quoque est suprâ dictum de similitudine quæ inter *F. mammillosum* et *F. crispum* interest maximâ, et de variis utrumque dignoscendi modis. Hoc unum adjicere liceat; discrepare has stirpes, me judice, reverà, et nequaquam ad eandem pertinere posse speciem. A reliquis omnibus hactenus notis Fucorum speciebus *F. mammillosus* primo statim aspectu et affatim dignoscitur.

- a. *F. mammillosus*, magn. nat.
- b. *processus frondis ligulati, tuberculiferi*, magn. auct. 6.
- c. *aliud exemplar, propemodum nudum*, magn. nat.
- d. *var. β*.
- e. *var. γ*.
- f. *processus frondis ligulati, cum fructu*, magn. auct. 6.
- g. *alterum ejusdem varietatis exemplar*, magn. nat.
- h. *var. δ*.
- i. *frondis pars*, magn. auct. - - - - 6.
- k. *tuberculum dissectum* - - - - 4.
- l. *semina et fibræ* - - - - 2.
- m. *semina* - - - - 1.
- n. *var. ε*, magn. nat.
- o. *ejusdem apex*, magn. auct. - - - - 6.



Phanus mammillosum.

Fucus mammillosus, frond cartilaginous, channelled on one side, nerveless, dichotomous, elongato-cuneiform, proliferous from the sides and surface, entire at the margins: tubercles spherical, scattered all over the frond, on very short peduncles.

Fucus mammillosus. Linn. Trans. III. p. 174. Syn. Fuc. II. p. 237. Eng. Bot. XV. t. 1054. (excl. Syn. Raii.)

ESPER, Ic. Fuc. II. p. 21. t. 122.

F. canaliculatus. var. β. Fl. Ang. p. 583.

F. ceranoides. var. ε. Fl. Scot. II. p. 916.

F. ceranoides. var. δ. GMELIN, Hist. Fuc. p. 115.

F. ceranoides. WITH. IV. p. 99.

F. alveolatus. ESPER, Ic. Fuc. I. p. 139. t. 70.

F. polymorphus. 4th series. LAMOUROUX, Diss. p. 3. t. 17. f. 37. t. 18. f. 38.

F. humilis dichotomus membranaceus ceranoides latioribus foliis ut plurimum verrucosis. MORIS. Hist. Plant.

Ox. III. p. 646. s. 15. t. 8. f. 13.

Ulva crispa. var. δ. Fl. Fr. Ed. 2da. II. p. 13.

β. *linearis*; frond narrow, linear; apices bluntish and emarginate.

F. mammillosus. var. β. Linn. Trans. III. p. 174. Syn. Fuc. II. p. 237.

F. ceranoides. var. ζ. Fl. Scot. II. p. 917.

γ. *prolifer*; frond proliferous at both the disk and margin with very numerous clustered oblong tuberculate processes.

F. mammillosus. var. γ. Syn. Fuc. II. p. 237.

F. polymorphus. LAMOUROUX, Diss. t. 18. f. 40.

δ. *echinatus*; branches all dilated upwards, nearly naked on one side.

F. mammillosus. var. δ. Syn. Fuc. II. p. 237.

F. echinatus. Ner. Brit. p. 65. t. 12.

F. polymorphus. LAMOUROUX, Diss. t. 18. f. 39.

ε. *incurvatus*; frond nearly linear; apices rounded; peduncles of the tubercles incurved.

F. mammillosus. var. ε. Syn. Fuc. II. p. 237.

On the southern and western coast of England and Ireland.—Scotland. Lightfoot.—French coast. Lamouroux.—All the varieties in Devonshire. Mrs. Griffiths.—I have received it from the coast of Portugal near the mouth of the Douro.

Perennial. November—January.

ROOT, a small, expanded, callous disk.

FRONDS, numerous from the same base, from three to six inches long, at their origin nearly cylindrical and scarcely thicker than a sparrow's quill, but immediately becoming compressed, and gradually expanding, so that before they are half an inch high they are flat and a line wide; they continue to the very extremities regularly increasing in width, but most slowly, seldom exceeding four lines in diameter in their widest part: at the height of about half an inch or an inch they become forked, and are afterwards repeatedly divided in the same manner at very uncertain intervals, the branches being all patent or between patent and divaricated; the apices are bifid with the sinuses of the angles rounded, and the segments of most irregular length, some short and blunt, others rather long and acute, in either case uncertain with regard to their being entire or emarginate, and generally a few are to be met with which end in a long narrow subulate point: examples of all these different forms occasionally occur on the same specimen: the margins of the frond, which are always quite entire, are sometimes naked, but at other times proliferous with flat ligulate simple or forked variously twisted processes, three or four lines long, and scarcely one wide, of the same substance and color as the frond itself, the flat surface of which, on both sides, near the centre generally, but by no means constantly, produces a few more similar ones: the upper branches are mostly quite flat, but the more narrow ones and the stem are always channelled on one side and convex on the other, in the same manner as in *F. canaliculatus*, though in a less degree: this peculiarity is even more observable in the recent plant than after it has been dried, though but little pressure may have been used.

FRUCTIFICATION, spherical tubercles, of a deep red, or brown color, scattered in the greatest profusion all over both sides of the frond in the upper branches, so as sometimes nearly to cover it, standing on exceedingly short peduncles, rising at first in the form of minute subulate cilia, which, as they grow older, swell at their tips and

assume the form of capsules, of which they also perform the office, being full of a mass of red roundish seeds enclosed within a number of short simple parallel fibres of the same color: some tubercles also generally grow upon the ligulate processes, as well as on the primary frond; and I have occasionally, but very rarely, observed one or two of them imbedded in the substance of the frond, but still preserving the shape and the size of those of this species, and not at all liable to be confounded with the fruit of *F. crispus*.

COLOR, a deep rich brown, with a red or purplish tinge, paler near the tips where it is often a bright pink; it is everywhere semitransparent, and in some specimens as glossy as if it had been varnished: if long exposed to the sun, it turns white; and in decay changes to a pale green.

SUBSTANCE, cartilaginous and thin, but tough.

The variety β has a frond barely two lines wide and linear from top to bottom, channelled also equally throughout its whole length; its apices are generally short, bluntish and rounded; but this is far from certain; its color is a deep brown; its length eight inches or more.

γ , on the other hand, seldom exceeds three inches in height, and has a frond of an elongated cuneiform shape, less frequently divided than that of the other varieties, and indeed often only once forked, but at the same time prolific towards its apices with a great profusion of ligulate processes about an inch long, which in figure and every other respect except size resemble the primary frond: specimens of this variety are occasionally seen, like that represented at g, which approach very near to *F. Brodiaei*.

δ is remarkable for the lower part of its frond preserving nearly an equal width, and the upper branches being more regularly cuneiform and wider than in the preceding varieties: it has its mammillæ also generally confined to one side: its length is about three inches: its color similar to that of α , but sometimes green; though I cannot but think that my friend, Mr. Stackhouse, was deceived by some specimens that had grown in an unusual situation, and led him to mention the bright apple-green hue as characteristic of the species.

ϵ , like β , has a narrow and nearly linear frond, channelled from top to bottom, but not more than four inches in height: its apices are long and rounded, and to these alone is confined the fructification, which is supported upon peduncles two or three lines long and singularly incurved. There is a striking resemblance, which would be but little expected, between some specimens of this variety and *F. gigartinus*.

Obs. It would not have been difficult to have greatly increased the number of the varieties of *F. mammillosus* till they equalled those of *F. crispus*; or even to have doubled the quantity of both the one and the other; but I have been deterred from such an attempt by finding it still more impossible to prescribe any limits to the several appearances of the plant before us than to those of the subject of the preceding plate; there not being in its varieties the same striking diversity of substance, so that differences of form are the only grounds to rest upon.

Dr. Goodenough and Mr. Woodward, to whom we are indebted for first describing *F. mammillosus* as a distinct species, very justly observed respecting it, that "the errors, which have attended upon the investigation of this plant, are owing in a great measure to Linnæus himself, who inadvertently under his *F. ceranoides* referred to the figure of Morison above quoted; a figure that altogether militates against the description which he gives of *F. ceranoides*; for he describes it as having *apices vesiculosos*, which *F. mammillosus* never has." Hence subsequent writers, trusting rather to such a figure than to the words of the author, have been led into endless confusion, the natural result of which was that the species continued unknown. Hudson alone, observing the peculiarity of the channelled frond, was led to consider it a variety of *F. canaliculatus*; an error which to us may well appear extraordinary, but which is fully excusable in the *Flora Anglica*, considering how completely the study of the Marine Algæ was then in its infancy. Enough has already been said upon the subject of the difference between *F. crispus* and *F. mammillosus*, which I am fully persuaded are truly and essentially distinct, notwithstanding the many important points in which they agree. There is no other *Fucus* with which I believe it is likely that the species before us should be confounded.

- | | |
|--|----|
| a. <i>F. mammillosus</i> , natural size. | |
| b. <i>ligulate processes, with tubercles</i> , magnified | 6. |
| c. <i>another specimen, nearly naked</i> , natural size. | |
| d. <i>var. β</i> . | |
| e. <i>var. γ</i> . | |
| f. <i>ligulate processes, with fruit</i> , magnified | 6. |
| g. <i>another specimen of the same variety</i> , natural size. | |
| h. <i>var. δ</i> . | |
| i. <i>part of the frond</i> , magnified | 6. |
| k. <i>section of a tubercle</i> | 4. |
| l. <i>seeds and fibres</i> | 2. |
| m. <i>seeds</i> | 1. |
| n. <i>var. ϵ</i> , natural size. | |
| o. <i>apex of the same</i> , magnified | 6. |

Fucus, fronde cartilagineâ, planâ, enervi, vagè dichotomâ, integerrimâ; segmentis sursum versus dilatatis; apicibus patenti-reflexis, obtusis: tuberculis hemisphæricis, solitariis, sparsis, sessilibus.

HABITAT ad Caput Bonæ Spei. *D. Brand, in Herb. Banks. 1774.*

Perennis?

RADIX callus explanatus, perpusillus, dilutè fuscus.

FRONS tri-quadri-pollicaris, ortu compressa et pennæ corvinæ crassitie, mox plana, et statim a radice se sensim dilatans usque ad apices ubi quatuor lineas est lata; ipsam juxta basin ordine vagè dichotomo finditur, et simili modo iterum atque iterum est ramosa, intervallo inter singulas dichotomias brevi attamen incerto, segmentis patentibus, summis patenti-reflexis; alii quoque rami, qui breves sunt et eodem sunt modo quo frons primaria quam formâ referunt divisi, hîc illîc e lateribus oriuntur; tota frons nervo venisque caret; margines ubique sunt integerrimi; apices rotundati et ferè truncati.

FRUCTIFICATIO tubercula hemisphærica, *Raphani sativi* seminum magnitudine, sessilia, per ramos superiores copiosè sparsa, et utrique horum paginæ insidentia, juniora frondi concolora, superficie lævigatâ æquali, adulta pallidè cornea et extrinsecus rugulosa, intus e fibris parallelis densissimè constipatis omninò constantia, seminibus dilutè purpureis sphæricis immixtis.

COLOR sanguineus, fusco perfusus, juxta radicem nigricans, prope apices pallidior et subdiaphanus.

SUBSTANTIA inter cartilagineam et membranaceam media, lenta, tenax.

Obs. Ramorum apices aliquantum sunt revoluti, sed nihil crispum undulatumve in reliquâ stirpe notavi: per desiccationem non adhæret chartæ.

Quàm insignitè sit *F. crispus* indole suâ mutabilis et quàm aptum Goodenovianum illud, quòd omne quicquid tangit gest idem, jam sub illâ declaravimus specie, neque necesse est ut rem decantatam omnibusque satis notam botanicis hîc ampliùs repetamus. Quòd autem major est in *F. crispo* enucleando ejusdemque varietatibus definiendis difficultas, eò impensius nos nitamur oportet ut non modò omittamus nihil quod ad stirpem ritè intelligendam conferat, sed ut omnia, quantum hoc fieri potest, sub aspectum simul veniant. Proximas igitur *F. crispo* colloco tres Fucorum species, quæ quod ad frondis formam attinet certè multum referunt aliquas hujus plantæ varietates, et quidem magis quam quædam ex his alias. Nisi autem omnia me fallunt, sunt, quamvis simillimæ, revera distinctæ; discrimine in fructificatione posito, quæ in *F. dilatato* et *F. lineari* e tuberculis constat substantiæ a reliquâ fronde diversæ, et ejus superficiæ insidentibus neque ullo modo immersis, ut, si deciderent, illæsam relinquerent foraminibusque nullis pertusam. Colore quoque hæ stirpes a *F. crispo* discrepant, et de Fucorum colore jam sæpe in hoc opere memoratur, quàm multum sæpe in speciebus discriminandis prosit, nec ludere sit solitus, sicut in plantis phænogamis terrenis. Var. 9 est ea inter varietates *F. crispî* ad quam *F. dilatatus* maximè accedit: multum est etiam affinis *F. crenulato* et *F. Norvegico*, quibus idem ferè est fructus, sed per ramos omnes sursum versus dilatatos, unde nomen specificum, ab his primo aspectu dignoscitur.

a. <i>F. dilatatus</i> , magn. nat.					
b. <i>frondis apex</i> , magn. auct.	-	-	-	-	6.
c. <i>fibræ et semina</i>	-	-	-	-	1.

Fucus dilatatus, frond cartilaginous, flat, nerveless, irregularly dichotomous, entire at the margins, regularly widening upwards; apices between patent and reflexed, obtuse: tubercles hemispherical, solitary, scattered, sessile.

At the Cape of Good Hope, 1774. Mr. Brand, in the Banksian Herbarium.

Perennial?

ROOT, a very small, pale brown, expanded, callous disk.

FROND, from three to four inches long, at its origin compressed and of the thickness of a crow's quill, but quickly becoming flat, and gradually widening from the base to the extremities where it is four lines in width: immediately adjoining the root it is divided in an irregularly dichotomous manner, and is afterwards again repeatedly branched in the same way, the intervals between the several dichotomies being short but uncertain, the segments in general patent, the upper ones between patent and reflexed: other branches also, which are short and divided in the same manner as the primary frond which they resemble in form, originate here and there from the sides of the frond, which is everywhere destitute of midrib or veins: the margins are quite entire: the apices rounded and almost truncate.

FRUCTIFICATION, hemispherical tubercles, about the size of radish-seed, sessile, plentifully scattered all over the upper branches, and equally abundant on both sides of them, when young nearly of the same color as the frond with a smooth level surface, but at maturity changing to a pale flesh color and wrinkled on the surface; internally they consist of a mass of fibres very closely matted together mixed with light purple spherical seeds.

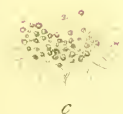
COLOR, deep red tinged with brown, blackish near the roots, towards the apices paler and semitransparent.

SUBSTANCE, between cartilaginous and membranous, flexible and thin, but tough.

OBS. The ends of the branches are somewhat revolute, but I have observed in the plant no other tendency to be curled or contorted: in drying, it does not adhere to paper.

After having dwelt upon the highly variable nature of the species last described (*F. crispus*) and fully coincided with the observation made by Dr. Goodenough and Mr. Woodward respecting it, that every thing which merely approached it became the same, I am led now to figure three other Fuci, which, by reason of their fructification, I regard as specifically distinct, although I am well aware that in point of form they by no means so much differ from the various appearances of *F. crispus* as these latter do one from another. In the plate before us and in the following one the tubercles are really sessile upon the sides of the frond, and are of a nature totally distinct from it, nor could their falling off, by any accident, leave cavities in the places that they formerly occupied. Their color also is unlike that of any of the varieties of *F. crispus*, and I have already in the course of this work had occasion repeatedly to observe that this is a character on which considerable stress may be laid in the investigation of the marine algæ. It is to the var. ♀ of *F. crispus* that our *F. dilatatus* bears the closest affinity: from *F. crenulatus* and *F. Norvegicus*, to which it is also very nearly allied, and which it resembles in fructification, it differs in its branches being regularly dilated upwards.

- | | | | | |
|--|---|---|---|----|
| a. <i>F. dilatatus</i> , natural size. | | | | |
| b. apex of the frond, magnified | - | - | - | 6. |
| c. fibres and seeds | - | - | - | 1. |



Fucus dilatatus.

Fucus, fronde cartilagineâ, compressâ, crassâ, enervi, lineari, dichotomâ; segmentis erecto-patentibus; apicibus rotundatis, obtusis: tuberculis hemisphæricis, solitariis, sparsis, sessilibus.

HABITAT apud Portum Sanctæ Trinitatis in Americæ Borealis oris occidentalibus. *D. Menzies*.

Perennis?

RADIX nondum a me visa.

FRONS palmaris, vel semipedalis, ortu teretiuscula, et pennâ corvinâ crassior, sed ferè statim plana facta, vel potiùs ob crassitiem plano-compressa, latitudine bilineari, qualem ad ipsos usque apices ubique æqualem servat, nervi venarumque tota expers, ad unum circitèr a radice pollicem indivisa assurgit, ibi bifurca, et eodem ferè intervallo similiter divisa, hinc dichotomiis crebris ad apices pergens: omnium anguli acuti, segmenta erecto-patentia; margines integerrimi; apices rotundati, obtusi, nec rarè emarginati.

FRUCTIFICATIO tubercula hemisphærica, *Ervi tetraspermi* seminibus paullò majora, sessilia, solitaria, per ramos superiores copiosè sparsa, et utrique horum paginæ paritèr insidentia, coloris livido-carnei, extrinsecùs glabra et æqualia, intùs repleta congerie seminum minutissimorum sphæricorum purpurascentium, fibris nullis, quantum de- tegere potui, immixtis.

COLOR intensè fusco-lividus, obscurus, absque nitore, apices versus rubens; *exsiccatæ* atro-purpureus; sin luci diutiùs æquo obijciatur in albicantem evanidus.

SUBSTANTIA cartilaginea, rigidiuscula, tenax, perquàm crassa.

Ingens ille specierum numerus quæ sub genere *Fuco*, sicuti in præsens constituitur, militant, et nominum trivialium frequens mutatio, ob discrepantes variorum de variis stirpibus auctorum sententias, efficiunt ut difficile imò potiùs impossibile sit semper ea seligere quæ nunquam antea a Botanicis usitata fuerunt. Synonymorum confusione hinc proculdubio aperitur porta, quæ verò non diu aperta manebit sed claudetur quamprimùm Algæ submersæ in nova redigentur genera; quum eadem haud ampliùs complectetur familia *F. linearem* hunc nostrum, quæ *F. distichum* et *F. vesiculosum*, quorum hic Hudsono ille *Floræ Danicæ* auctoribus *F. linearis* audit. Ut colorem autem fructumque omittam, discrepat insuper hæc stirps a *F. crispì* varietatibus angustis linearibusque quodd substantiâ sit prædita longè crassiore magisque rigidâ, per quam etiam a *F. Norvegico*, *F. crenulato*, et *F. obtusato* dignoscitur. Hæc eadem quoque efficit ut habitu quod aiunt generali sit dissimilis, nec, illorum instar, madefacta vagè undâ fluitante fluitet sed figuram qualis in exsiccatâ semper retineat, ne unius rami situ mutato.

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|--|----|---|----|
| a. <i>F. linearis</i> , magn. nat. | | | |
| b. <i>frondis longitudinalitèr dissectæ pars</i> , magn. auct. | 4. | | |
| c. <i>ejusdem horizontalitèr dissectæ pars</i> | - | - | 4. |
| d. <i>tuberculum dissectum</i> | - | - | 2. |

Fucus linearis, frond cartilaginous, compressed, thick, nerveless, linear, dichotomous; segments between erect and patent; apices rounded, blunt: tubercles hemispherical, solitary, scattered, sessile.

At Trinidad, on the North West Coast of America. *Mr. Menzies*.

- *Perennial?*

ROOT, I have not yet seen.

FROND, from four to six inches long, at its origin nearly cylindrical and thicker than a crow's quill, but almost immediately becoming flat, or rather from its thickness between flat and compressed, and acquiring a width of about two lines, which it preserves to its very extremities: it is everywhere destitute of veins and midrib: to the height of somewhat more than an inch it rises undivided, and then becomes forked, after which it is again cleft in a similar manner at nearly the same interval, and afterwards repeatedly dichotomous till it reaches the apices: the angles of all the divisions are acute: the segments between erect and patent: the margins quite entire: the apices rounded and obtuse, and not uncommonly emarginate.

FRUCTIFICATION, hemispherical tubercles, somewhat larger than Tare seed, sessile, solitary, plentifully scattered over the upper branches, and equally abundant on both sides of them, of a livid flesh-color, externally smooth and even, within filled with a mass of exceedingly minute purple roundish seeds, without any mixture of fibres as far as I could perceive.

COLOR, a deep opaque livid brown, perfectly destitute of gloss, reddish towards the apices, turning from drying to a blackish purple, and from being exposed too long to the air to white.

SUBSTANCE, cartilaginous, rather rigid, tough, very thick.

I have felt but little scruple about applying to this *Fucus* a name which had been previously appropriated by the authors of the *Flora Danica* to our *F. distichus* and to the var. γ of our *F. vesiculosus* by Hudson; as, though I am well aware how much every thing that may tend to the confusion of synonymy is to be avoided, still the great number of species of *Fucus*, as the genus at present stands, renders such a step occasionally inevitable; and, as soon as a new arrangement shall take place, the *F. linearis* here figured and those plants which have been previously so called can no longer possibly remain in the same family. Independently of its color and its fructification, our *F. linearis* also differs from the narrow and linear varieties of *F. crispus* in the greater thickness of its frond, by which character it is likewise effectually distinguished from *F. Norvegicus*, *F. crenulatus* and *F. obtusatus*. This same peculiarity also greatly affects its general habit, rendering it when immersed stiff and unchanged, instead of being like the plants just mentioned moveable with every undulation of the water.

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|---|----|
| a. <i>F. linearis</i> , natural size. | |
| b. longitudinal section of the frond, magnified | 6. |
| c. horizontal section of the same - - - | 6. |
| d. section of a tubercle - - - | 2. |



Fucus linearis.

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Fucus, fronde cartilagineâ, teretiusculâ, dichotomâ; segmentis erecto-patentibus; apicibus abbreviatis, obtusis: tuberculis sphæricis, solitariis, ubique sparsis, semi-immersis.

HABITAT - - - - - *Herb. Ellis.*

Perennis?

RADIX nondùm a me visa.

FRONS circitèr tripollicaris, teres, vel hìc illic aliquantùm compressa, pennæ corvinæ crassitiem ubique æqualem a basi ad apices servans, ipsam juxta radicem bifurca, et postea furcis quinquies sexiesve repetitis dichotoma, intervallo inter inferiores pollicari, inter summos vix duarum linearum; segmenta omnia patentia; apices breves, emarginati, obtusi.

FRUCTIFICATIO per frondem ubique et undequaque satis copiosè sparsa, e *tuberculis* constans sphæricis, *Ervi tetraspermi* seminum magnitudine, semi-immersis, ut tota planta torulosa appareat, intùs foveitis congeriem seminum fibrarumque lætè rubrarum, ita tamen exiguarum ut uniuscujusque forma visum quamvis armatum effugiat.

COLOR *stirpis madefactæ* ruber, non sine lividine; *exsiccata* omninò lividus; si in aquâ dulci diutius æquo servetur fit sordidè albo-flavescens.

SUBSTANTIA cartilaginea ad corneam accedens, tenax.

Servantur in Herbario Ellisiano hujus Fuci exemplaria eodem quod hìc retinetur nomine indigitata, loco tamen natali adjecto nullo neque ullâ notulâ quæ vel stirpis historiam illustraret vel acutissimi Ellisii de affinitatibus sententiam patefaceret. In nullo unquam alio phytophylacio servatum vidi, neque ab auctoribus Britannis exterisve memoratum reperio. Formâ habituque *F. vermicularis* stat inter *F. crispum* et *F. confervoidem*, species, si quæ aliæ, distinctissimas, quasi medius, ab utroque satis diversus, et paritèr ab omnibus hactenus descriptis Fucis. Nullus hinc in dignoscendo labor neque pro specie distinctâ describenti scrupuli ulli injiciuntur. Idem olim nomen specificum plantæ longè dissimili, *F. ovali* nostro, imposuerat Gmelinus, de quo tamen non est opus ut pluribus verbis hìc dissererem.

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|---|---|---|----|
| a. <i>F. vermicularis</i> , magn. nat. | | | |
| b. <i>frondis dissectæ pars</i> , magn. auct. | - | - | 6. |
| c. <i>tuberculum</i> | - | - | 3. |

Fucus vermicularis, frond cartilaginous, subcylindrical, dichotomous; segments between erect and patent; apices short, obtuse: tubercles spherical, solitary, scattered all over the frond, and half imbedded in its substance.

HABITAT - - - - - *Herb. Ellis.*

Perennial?

ROOT, I have not yet seen.

FROND, about three inches long, cylindrical, or here and there slightly compressed, preserving from the root to the tips an everywhere equal width of about a crow's quill, forked almost immediately adjoining the root, and afterwards five or six times divided in the same manner, with an interval of about an inch between the lower but of scarcely two lines between the upper dichotomies: the segments are all patent: the apices short, obtuse, and emarginate.

FRUCTIFICATION, scattered in sufficient abundance all over every part of the frond, consisting of spherical tubercles about the size of rape seed, half immersed, so that the whole surface appears uneven and warty; within they contain an infinite number of seeds and fibres, of a bright red color, but so small that the form of each is not to be discovered even with the assistance of a microscope.

COLOR, red with a livid tint when wet; quite livid after it is dried; turning to a dirty yellowish white if kept too long in fresh water.

SUBSTANCE cartilaginous approaching to horny, tough.

In the Ellisian Herbarium are preserved specimens of this *Fucus*, under the name here given to it, but unaccompanied with any information that may lead to the discovery of its locus natalis, or indeed with any remark whatever. I have never received it through any other channel, nor do I find it mentioned in the writings of any botanical author. In point of appearance it is intermediate between *Fucus crispus* and *Fucus confervoides*, and almost equally removed from the one and the other; but so evidently different from both and from every other *Fucus* at present known, that I have felt no scruple about here publishing it as a distinct species. I need scarcely remark that the *F. vermicularis* of Gmelin, the *F. ovalis* of this work, is wholly unlike the plant here figured.

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|---|---|---|---|---|----|
| a. <i>F. vermicularis</i> , natural size. | | | | | |
| b. section of the frond, magnified | - | - | - | - | 6. |
| c. tubercle, taken out | - | - | - | - | 3. |



Fucus vermicularis.



Fucus, fronde cartilagineo-coriaceâ, crassâ, planâ, lineari, enervi, dichotomâ; ramis erecto-patentibus, strictis, fastigiatis; apicibus obtusis, emarginatis.

Fucus chondrophyllus. BROWN, M.S.S.

HABITAT apud Portum Dalrymple, in Novæ Hollandiæ oris. D. Brown.

Perennis.

RADIX hactenus me latet.

FRONS octo novemve pollicum, aut forsân etiam pedalis cùm basin ipsam nondùm viderim, plano-compressa, in parte inferiore sesquilineam vel duas lineas lata et semilineam crassa, exinde sensim angustata atque attenuata ut apices quadruplo sint angustiores tenuioresque; ad unius alteriusve pollicis altitudinem indivisa assurgit, ibi bifurca, et postea dichotomiis decies aut sæpiùs repetitis fit ramosa, intervallo inter singulas perbrevis; furcarum angulis acutis, attamen lenitè rotundatis; segmentis omnibus fastigiatis; apicibus truncatis emarginatis; margines ubique integerrimi, ipsam juxta basin interdùm ligulis aliquot homogeneis, novarum frondium, ut videtur, rudimentis, vagè obsiti, cæteroquin nudi; superficies æqualis, lævis: rami hîc illic diffracti novos ex apicibus emittunt primariis multoties angustiores, quod frondi dat faciem eandem annulatam sæpe in *F. lumbricali* notabilem.

FRUCTIFICATIO nondùm detecta.

COLOR intensè badius, opacissimus; sin stirps luci fortiori adversa teneatur, juxta apices pulchrè et saturatè sanguineus translucet: *exsiccata* ubique niger.

SUBSTANTIA coriacea, crassa; *madentis* lenta; *exsiccata* lignosa et fragilis.

Obs. Per desiccationem non adhæret chartæ.

Amicitia Roberti Brown Arm. jam sæpe in hoc opere laudati debeo Fucum hîc depictum, cujus tria modò adhuc exemplaria vidi, omnia magnitudinis ferè ejusdem et omnia paritèr carentia fructu. Neque tamen hoc obstitit quominus hanc stirpem pro specie distinctâ hîc delineatam ederem: formâ enim et substantiâ ab aliis hactenus notis recedit Fucis, et adjicitur Dni. Brown sententia, quâ nulla majoris ponderis adhiberi potest in rebus quibuslibet ad Botanicen spectantibus. De loco qui huic Fuco in systemate debetur difficile esset dijudicare, sed licet sperare, ut, hîc edendo, posteros ducamus Botánicos in Novæ Hollandiæ oris investigandis occupatos ut exemplaria magis perfecta fructuque instructa quærant conferantque.

a. *F. chondrophyllus*. magn. nat.

Fucus chondrophyllus, frond between cartilaginous and coriaceous, thick, flat, linear, nerveless, dichotomous; branches erecto-patent, straight, of equal height; apices emarginate and obtuse.

Fucus chondrophyllus. BROWN, M.S.S.

At Port Dalrymple, on the coast of New Holland. *Mr. Brown*.

Perennial.

ROOT, I am at present unacquainted with.

FROND, eight or more inches long, or perhaps extending to a foot, for I have never seen the very base, between flat and compressed, in its lower part from a line and a half to two lines wide and half a line thick, but thence gradually growing more narrow and more thin as it advances, so that at its apices it is not more than a fourth of either this width or this thickness; at the distance of an inch or two from the root it becomes forked, and is afterwards ten times, or even more frequently divided in a similar manner, the interval between each dichotomy being very short; the angles of the divisions are acute but somewhat rounded; the extremities all of equal height; the tips truncate and emarginate; the margins everywhere quite entire, sometimes immediately adjoining the base, irregularly beset with short ligulate shoots of the same nature and substance as the rest of the frond, but in other respects naked; the surface is smooth and even: where the branches are broken, there originate from the centre of the apices fresh shoots, much smaller than the primary ones, which give the frond the same annulated appearance so often observable in *F. lumbricalis*.

FRUCTIFICATION, none yet discovered.

COLOR, a deep chesnut, exceedingly opaque; but if the plant be held opposite to a strong light, the tips appear of a beautiful rich scarlet: when dry, it is everywhere black.

SUBSTANCE, coriaceous, thick; flexible in a moist state, but, after it is dried, woody and brittle.

OBS. In drying, it does not at all adhere to paper.

All that I have at present seen of this *Fucus* are three or four specimens, neither larger nor in any respect more perfect than the one here represented; but I have still no difficulty about publishing it as a distinct species, as well from its own form and appearance, as from the opinion of my friend Mr. Brown, whose judgment on every thing connected with every branch of botany must always be of the greatest weight. Upon its place in the system, it would not be easy to speak with certainty; but we may be allowed to hope that the here publishing of it may induce future naturalists to search for its fruit, and thus enable us to throw upon its history that light, of which we are at present unfortunately deprived.

a. *F. chondrophyllus*, natural size.



Fucus chondrophyllus.

Fucus, fronde coriaceâ, planâ, enervi, lineari, dichotomâ, integerrimâ; ramis erecto-patentibus, strictis, fastigiatis; apicibus truncatis, incrassatis.

HABITAT in Nova Selandiâ. *D. J. Banks, Baronet.*

Perennis.

RADIX callus discoideus, diametro trium et ultra linearum, lignosa, dura, nigra.

FRONDES ex eâdem basi plurimæ, quatuor circiter pollices altæ, planæ, aveniæ enervesque, strictæ, vel apices versus aliquantum incurvæ, latitudinem ubique æqualem unius lineæ a basi ad apicem servantes, ipsum juxta ortum bifurcæ, et postea dichotomiis decies et ultra repetitis, intervallo inter singulas incerto, plerumque tamen brevissimo, sed interdum unguiculari divisæ; furcarum anguli acuti; frondis margines integerrimi; apices fastigiati, obtusi, lenitèr incrassati, sicut illi *F. obtusati*, insignitèrque truncati, quasi omnes in unum collecti uno fuerint ictu a cultro abscissi.

FRUCTIFICATIO nulla detecta.

COLOR, qui in recente verisimilitèr fuit olivaceus, est in exsiccata et paritèr in rursus madefactâ nigerrimus absque nitore; apices tamen versus pallidior fuscescensque conspicitur, si luci fortiori objecta observetur.

SUBSTANTIA coriacea, tenacissima.

OBS. Exsiccata chartæ nequaquam adhæret, et vix crassitie minuitur.

In omnibus quæ hactenus vidi hujus Fuci exemplaribus, et paritèr in omnibus horum exemplarium ramis, apices figuram eandem truncatam exhibuerunt, quod ita constantèr evenit, ut dubitationi non detur locus, quin hic crescendi modus verè speciei sit proprius, et neque a casu nec ab injuriâ aliquâ acceptâ pendeat. Si alitèr fuerit, certè suspicarer a fructificatione deciduâ ortum traxisse; cum non solum truncati verum etiam quodammodo incrassati apices conspiciantur. Ex analogiâ quoque judicans diceret aliquis in his positum esse fructum, et hunc e capsulis constitisse sphaericis. Fucus hic delineatus optimè salutaretur nomine specifico *truncatus*; cum hic verò titulus jamjam sit a Gmelino in *Systemate Naturæ* et ab Espero in *Fucorum Iconibus* speciei longè diversæ inditus, quam Pallasius in itinere legerat descripseratque, non hic repetendum duxi, planta licet Pallasiana, forsitan nunquam certò a Botanicis recognoscatur. E Fucis in hoc opere descriptis *F. abscissus* noster maximè ad *F. obtusatum* accedit. Plurima sunt, præter apices truncatos, in quibus hæ duæ conveniunt stirpes; et quidem tot tantaque ut, nisi adessent utriusque icones, forsitan ægrè per descriptiones solas distinguerentur. Revera autem discrepant, quòd *F. abscisso* margines frondis sint integerrimi, qui contrà in *F. obtusato* semper sunt enormitèr laciniati, et quòd hujus frons medio incrassata nervum simulet, dum nihil unquam simile in illo est detegendum. Staturam omitto disparem, utpote quæ in Fucus ludit; quod tamen non obstat quominus aliquid prodesse concedamus, si non datur ultra. Substantia autem haud ambobus est eadem: est enim *F. abscissus* semper tenuis, sicut *F. vesiculosi* *F. siliquosive* varietas quædam junior vel pusilla, qualem formâ etiam aliquatenus refert. Per eandem quoque ab *F. chondrophyllo* statim dignoscitur.

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|---|---|---|---|----|
| a. <i>F. abscissus</i> , magn. nat. | - | - | - | 6. |
| b. <i>rami apex</i> , magn. auct. | - | - | - | 5. |
| c. <i>ejusdem pars</i> | - | - | - | 3. |
| d. <i>frons horizontalitèr dissecta</i> | - | - | - | |

Fucus abscissus, frond coriaceous, flat, nerveless, linear, dichotomous; branches erecto-patent, straight, of equal height; their apices truncate and incrassated.

On the coast of New Zealand. *Sir Joseph Banks, Baronet.*

Perennial.

ROOT, a callous disk, three lines or more in diameter, woody, hard, and black.

FRONDS, numerous from the same base, about four inches high, flat, without veins or midrib, straight, or with a slight incurvation towards the apices, preserving from top to bottom an everywhere equal width of about a line, forked very near the root, and afterwards ten times, or still more frequently divided in a similar manner, the space between each dichotomy being quite uncertain, in general very short, though sometimes extending to half an inch; the angles of the forks are acute; the margins of the frond quite entire; the apices mostly of equal height, obtuse, slightly incrassated, like those of *F. obtusatus*, and remarkably level and truncated, as if they had all been laid together and cut off by a single stroke of a knife.

FRUCTIFICATION, none yet discovered.

COLOR, most probably an olive-green in the fresh plant, but turning when dry to an intense black, quite devoid of gloss, and continuing so if afterwards subjected to immersion; paler, however, near the tips, and there brownish, when opposed to a strong light.

SUBSTANCE, coriaceous, extremely tough.

OBS. In drying, it shrinks very little, and does not in the least adhere to paper.

So uniformly do the apices of this *Fucus* preserve in every specimen that I have yet seen, and in every individual branch of these specimens, the same truncated appearance, that it is impossible to suspect that such a formation is either the result of accidental injury, or is otherwise than natural to the plant. Were it less general, the peculiar thickness of this part would infallibly induce an opinion that it had been caused by the falling off of the fructification, which from analogy I feel almost persuaded will be found to consist of globular capsules, and to have been situated upon the extremities. The name of *F. truncatus* having already been given by Gmelin, in the *Systema Naturæ*, and by the late Professor Esper to a very different species originally gathered by Pallas, I have not ventured to assign it to the plant before us, though it would have been admirably applicable. Of the Fuci already figured in this work *F. abscissus* comes nearest to *F. obtusatus*. The two agree materially together in many points, and it might be difficult to distinguish them by descriptions unaided by figures, but they assuredly differ essentially in the margins of *F. abscissus* being in all cases entire, and in no part of its frond shewing any symptom of a midrib or of a tendency to be incrassated in the center. Of their respective sizes I say nothing; as this in all Fuci is subject to variation, and may in the plant before us be accidental, though I do not believe it to be so; but their substances are very dissimilar, that of *F. abscissus* being always thin, nearly like a variety of *F. vesiculosus* or *F. siliquosus*, for one of the smallest of which it might almost be overlooked. This latter circumstance also serves to distinguish it from *F. chondrophyllus*.

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|---|---|---|----|
| a. <i>Fucus abscissus</i> , natural size. | | | |
| b. end of a branch, magnified | - | - | 6. |
| c. part of the same | - | - | 5. |
| d. horizontal section of the stem | - | - | 3. |



Fucus abscissus.



Fucus, fronde cartilagineâ, compresso-planâ, lineari, vagè ramosâ, articulatâ; ramis alternatim bipinnatis, acuminatis; apicibus involutis, (*tuberculiferis*?)

Fucus purpureus. ESPER, *Ic. Fuc. I. p. 114. t. 58.* (exclusis synonymis plurimis.)

Fuco fruticoso tintorio col gambo poroso, e colle foglie, che somigliano a quelle del Millefoglio. GINANNI, *Op. Post. I. p. 23. t. 22. f. 52.?*

Fucus striatus. DRAPARNAUD. (*ined.*?)

HABITAT in Mari Siculo. VICECOMES DE VALENTIA.—E Mari Rubro copiosè missam accepit *D. I. Banks, Baronet.*;—e variis Maris Mediterranei littoribus ipse pluries.

Perennis?

RADIX callus difformis, ad figuram discoideam tamen accedens, diametro unguiculari et ultrâ, niger, durus, fibras etiam emittens aliquot breves, concolores, crassiusculas, ramosas.

FRONDES ex eâdem basi plurimæ, subpalmæ, compresso-planæ, diametrum haud unius lineæ et ubique ferè æqualem, excepto prope apices ubi paullum angustior fit, servant, ipsam juxta basin plerumque in tres quatuorve ramos subfastigiatos divisæ, qui nunc simplices nunc iterum vagè divisi evadunt; omnes per totam sunt longitudinem pinnati ramis alternis, patentibus, spatio inter singulos sesquilineari, primariorum, nisi ob formam triplo quadruplove angustiorum, omninò similibus, his et quidem plurimis vix unguem longis et tantum ramulo uno alterove brevissimo spiniformi instructis, aliis, quales præcipuè prope frondis apices reperiuntur, elongatis et bi-tri-pinnatis, utrâque pinnarum serie subjacentibus minore, cunctis eâdem ratione dispositis: frons tota, si per lentem spectetur lucique objiciatur fortiori, minutissimè transversim striata apparet, striis nigricantibus approximatis: frondis apices aliqui, præsertim inter superiores, incurvati conspiciuntur, et in sphaerulam minutissimam concolorem turgent, sed nec semina nec fibras intus nidulantes detegere licuit, quare, horum indole sæpius investigatâ, nihil pro certo affirmare ausim, et nolens fateri sum coactus ut

FRUCTIFICATIO nulla hactenus sit detecta.

COLOR, qui *recentis* verisimillimè fuit intensè rufo-fuscus, fit in *exsiccatâ* nigerrimus absque nitore, neque ullâ est posthac arte in pristinum revocandus: apices autem aliquandiu manent reliquâ fronde pallidiores, sed etiam hi tandem nigrescunt.

SUBSTANTIA cartilaginea, lenta, tenax.

OBS. In aquâ dulci immersa colorem pulchrè subfuscum copiosè emittit, quod facit etiamsi per plures annos in statu exsiccatò fuerit servata, et aquâ ter quater mutatâ: chartæ nequaquam adhæret.

Icon hujusce Fuci Esperiana stirpis characterem bene refert; ut de specie suâ nullus detur dubitationi locus. Nequeo autem, quod ad synonyma attinet, b. viro assentiri; dubia enim videntur cuncta, quædam certè ex errore prolata. Mirum tamen, fateor, videtur, quòd nullus de plantis marinis scriptor Fucum memorâset, quem e Mari Rubro et Mediterraneo copiosè acceptum eadem haud infrequentè colere liquet; et qui formâ a reliquis abludente statim est dignoscendus. Indole suâ et paritè colore texturâque *F. purpureus* ad *F. pinastroidem* *F. lycopodioidem*que accedit; his proximus in systemate disponendus. Horum quoque instar desiccatus nigrescit, tincturamque in aqua dulci largitè effundit; qualitèr etiam *Conferva elongata* cæterisque huic affinibus algis accidere solet, quæ omnes insupèr habent frondem geniculatam cum *F. purpureo* communem. Adjeciendum est hujus nostræ stirpis apices, eorum *F. pinastroidis* instar, involutos reperi. Sed neque cum hoc nec cum alio quopiam suprà memorato tantum consentit *F. purpureus* quantum cum *F. cristato*, aut, ut rectiùs dicam, cum ejus varietate γ . Frons plana crescendique modus pinnatus non nisi his duobus dantur, quibus etiam eadem est structura articulata, colorque habitusque idem. Hæc tamen haud obstant quominus per *F. purpurei* apices incurvos texturamque cartilagineam faciliè dignoscantur. De *Fuco* Gmelini *purpureo* dubius omninò hæreo, uti jamjam in hujus operis vestibulo, cum *F. purpurascentem* describerem, dixi. Non sanè multum refert, an sub illâ specie, sicut plurimis est visum, an sub hac nostrâ, sicut Espero, citetur. Habet quoad descriptionem quæ utrique conveniunt, et litem verisimillimè nemo dirimet, nisi auspicatò specimina suapte manu notata in b. viri herbario reperirentur. Cum igitur nulla ejus icon extet, haud operæ pretium duxi semel dubiè citatum rursus dubitantèr in partes vocare. Ut verum quoque fatear,

224.—FUCUS PURPUREUS.

synonymon etiam Ginannii haud nimis certum videtur; neque enim ea est icon neque descriptio quâ fidenter niti sim ausus. *Fucum* verò *tinctorium* cùm appellet dicatque *colore violaceo* esse præditum, hinc Espero obsequens retuli.

a. <i>Fucus purpureus</i> , magn. nat.	
b. <i>ramus</i> , magn. auct.	6.
c. <i>apex ejusdem incurvus</i>	3.
d. <i>alter apex</i>	3.
e. <i>frondis particula, ut structura articulata pateat</i>	4.

224.—FUCUS PURPUREUS.

Fucus purpureus, frond cartilaginous, between compressed and flat, linear, jointed, irregularly branched; branches alternately bipinnate, acuminate; their apices involuted (*and bearing tubercles?*)

Fucus purpureus. ESPER, *Ic. Fuc.* I. p. 114. t. 58. (exclusis synonymis plerisque.)

Fucus fruticoso tintorio col gambo poroso, e colle foglie, che somigliano a quelle del Millefoglio. GINANNI, *Op. Post.* I. p. 23. t. 22. f. 52?

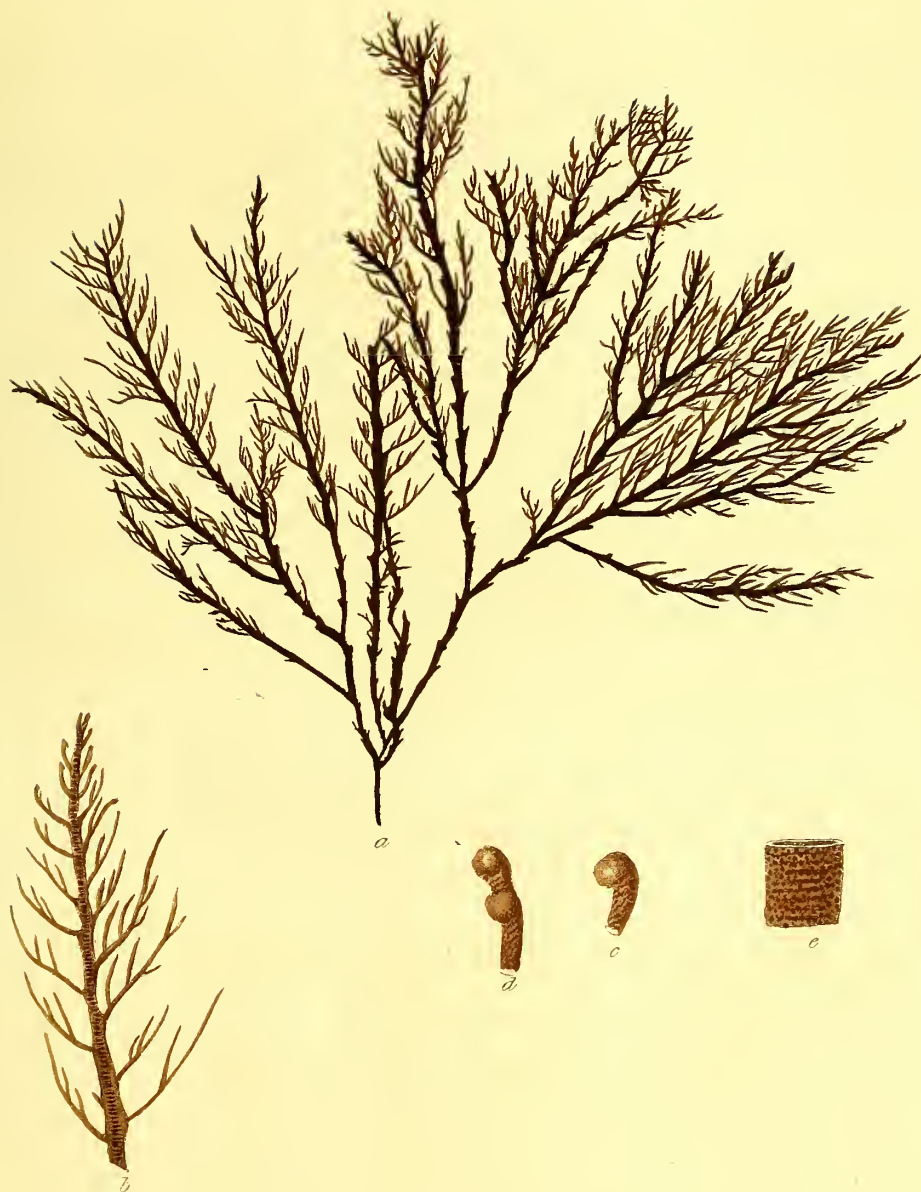
Fucus striatus. DRAPARNAUD. (*ined.?*)

On the coast of Sicily. *Lord Valentia*.—Sent in great quantity from the Red Sea to *Sir Joseph Banks*.—I have received it from many parts of the shores of the Mediterranean.

Perennial?

ROOT, a shapeless callus, approaching in some measure to disciform, half an inch or more in diameter, black and hard, and also shooting out a few short thickish branching fibres of the same color.

FRONDS, very numerous from the same base, 3 or 4 inches long, between compressed and flat, preserving every where an equal diameter of scarcely a line, except at the tips, where they are somewhat more narrow; almost immediately adjoining the root they are generally divided into a few segments of about the same height, which are sometimes simple, and sometimes once or twice branched in the same irregular manner; all of them are from top to bottom pinnated with alternate patent branches about a line and half apart from each other, which in every respect resemble the primary ones, except in being not more than a third of their width; of these latter the greater part are scarcely half an inch long, and only furnished with one or two very short spinelike ramuli; some of them, however, principally those about the ends of the frond, extend to the length of an inch or two, and are twice or thrice pinnated, each series of branches being in every respect smaller than the one below it, and all disposed in the same manner: the whole frond, if viewed under a glass and exposed to a strong light, is found to be very minutely transversely striated with thin blackish lines placed near each other; some of the ends of the shoots, especially among the upper ones, are remarkably incurved, and swell into a minute globule of the same color, and, apparently, the same texture as themselves, but, though I have repeatedly examined these, I have never been able to detect in them either seeds or fibres, so that I can say nothing with any certainty of their nature, and am obliged, reluctantly, to admit that the



Fucus purpureus.



FRUCTIFICATION remains at present undiscovered.

COLOR, most probably a deep red-brown in the recent plant, but turning quite black without gloss when dry, and never again suffering itself to be restored by future immersion or any other means: the tips, however, remain for a while paler than the rest, but these also at last turn black.

SUBSTANCE, cartilaginous, flexible, tough.

OBS. In fresh water it gives out very abundantly a beautiful chocolate dye, and retains this property after having been kept dried for many years, and though the water is repeatedly changed: it does not in the least adhere to paper.

The figure of this plant in Dr. Esper's work is by far too characteristic to leave any doubt as to the plant intended, but I am sorry to say I cannot agree with that author as to the synonyms he has quoted, though I own it appears to me not a little extraordinary to find in no writer upon the marine algæ, mention made of a species that I have reason to consider as one of the most common upon the shores of the Red Sea and the Mediterranean. It is also not only common, but very little liable to be mistaken. In many points of view it agrees with *F. pinastroides* and *F. lycopodioides*, near to which it will require to be placed in the system. Like them, it has the strong peculiarity of turning quite black in drying, and of staining the water in which it is immersed: the former of these plants has also the same singular propensity to curl at the ends of the shoots, and both of these, as well as *Conferva elongata* and the rest of their affinities, agree with *F. purpureus* in their jointed appearance. The *Fucus*, however, for which the one here figured is most likely to be mistaken, is the third variety of *F. cristatus*: this it not only resembles in most of the circumstances above mentioned, but also in its flat frond and pinnated mode of growth; but at the same time it is sufficiently distinguished by the incurved apices and the cartilaginous, not membranaceous texture. With regard to Gmelin's *F. purpureus*, whether this plant, as was the opinion of Professor Esper, or the British *F. purpurascens*, or indeed either the one or the other is the species he intended, is a point that must probably always remain in doubt, unless his Herbarium should fortunately still be in existence and contain authentic specimens. Having therefore already quoted it, though doubtfully, under *F. purpurascens*, I have thought it best here to omit it; nor do I consider the synonym above referred to from Ginanni as by any means undoubted; neither his plate nor his description affording any characters to be relied upon, though his calling it "*Fuco tintorio*," and saying that it is of a violet color, make it highly probable that *F. purpureus* really was what he had in view.

- a. *Fucus purpureus*, natural size
- b. branch, magnified - - - - 6.
- c. incurved apex of the same - - - - 3.
- d. another apex - - - - 3.
- e. portion of the frond, to shew the jointed appearance 4.

Fucus Usnea, frond gelatinous, between compressed and flat, much and irregularly branched; branches distichous, alternate, acuminate, with scattered seeds imbedded in their substance.

Fucus Usnea. BROWN, M.S.S.

At Kent's Islands, on the Coast of New Holland. *Mr. Brown*.

Annual?

ROOT, a small, brown, callous disk.

FRONDS, numerous from the same base, flat, or between flat and compressed, quite destitute of veins or midrib, six or eight inches long, furnished with a *stem*, which in some cases is undivided, in others twice or thrice dichotomous, a line and half wide near the base, but thence gradually growing more narrow, till at the apices it is not more than a fourth of that size: throughout its whole length it is beset with distichous, alternate, patent, scattered *branches*, separated from each other by short intervals, the lowest, which are generally the longest, about three inches in length, the rest short, all exactly like the stem, except in their smaller size, and all pinnated with others disposed in the same manner, and similar in point of texture and color, but still smaller; these latter also not uncommonly produce a fourth series: the ultimate branches, or *ramuli*, are compressed, between horizontal and patent, very slightly incurved, not placed more than a line apart from each other, either alternate or opposite, about half an inch long, but by no means equal in this respect, hardly so thick as a sparrow's quill, generally simple, though there are occasionally a few to be found that are pinnated with one or two smaller ones.

FRUCTIFICATION, none yet detected, except some spherical, tawny, solitary, scattered seeds, imbedded in the substance of the smaller branches.

COLOR, pale brown, inclining to fulvous, semitransparent, but soon fading to white, from exposure to the sun or being kept in fresh water.

SUBSTANCE, between gelatinous and cartilaginous, succulent, very tender, so that, if long kept in water, it melts into a mere mucus.

Obs. In drying, it adheres so closely to paper as almost to become incorporated with it, and shrinks to less than half its original size.

The close affinity of *F. Usnea*, in texture, habit and color, to *F. lichenoides* and *F. spinosus*, already figured in the preceding volumes of this work, naturally induces the belief that, though it has hitherto been found only with scattered seeds, it really produces its fruit enclosed in spherical capsules; on which account I have been led to say above in the description that the fructification remains at present undiscovered. From both these, as well as from *F. viscidus*, it is readily distinguished by its compressed frond and distichous branches, as it is from almost all other Fuci by its gelatinous texture, which leaves no doubt of its being equally applicable to the purpose of food as *F. lichenoides*, could it but be met with in equal quantity.

a. <i>F. Usnea</i> , natural size.						
b. <i>branch</i> , magnified	-	-	-	-	-	6.
c. <i>another branch</i>	-	-	-	-	-	6.
d. <i>portion of the same</i>	-	-	-	-	-	4.
e. <i>seeds?</i>	-	-	-	-	-	2.



Fucus usnea.

Fucus, fronde gelatinosâ, compresso-planâ, ramosissimâ; ramis distichis, alternis, acuminatis; seminibus sparsis in ramorum substantiâ immersis.

Fucus Usnea. BROWN, M.S.S.

HABITAT apud Insulas, *Kent's Islands* dictas, prope Novam Hollandiam. *D. Brown*.

Annua?

RADIX callus discoideus, exiguus, fuscus.

FRONDES ex eâdem basi plurimæ, planæ, vel e plano compressæ, nervi venarumque omninò expertes, sex octove pollices longæ, *caule* instructæ nunc indiviso, nunc vagè bis ter dichotomo, prope basiu sesquilineam lato, at exinde sensim angustato, ut apices versus quadruplo angustior evadat, obsito per totam longitudinem *ramis* distichis, alternis, patentibus, sparsis, perbrevis inter singulos intervallo, inferioribus, qui plerumque sunt longissimi, subpalmaribus, reliquis brevioribus, omnibus prorsùs similibus caulis, nisi quòd sint minores, omnibusque pinnatis aliis eâdem ratione dispositis homogeneisque, attamen minoribus; his quoque sæpe quartam ferentibus seriem: rami ultimi, seu *ramuli*, sunt compressi, horizontalitèr patentes, lenissimè incurvi, spatiis haud lineam longis sejuncti, oppositi alternive, circitèr unguiculares, at longitudo nequaquàm omnibus eadem, vix pennæ passerinæ crassitie, subulati, plerumque simplices, haud ita tamen ut non adsit hìc illic unus et alter ramis aliquot minoribus pectinatus.

FRUCTIFICATIO nulla hactenus detecta, præter semina quædam sphærica, fulva, solitaria, sparsa, in ipsâ ramorum minorum substantiâ immersa.

COLOR dilutè fuscus, ad fulvum accedens, semidiaphanus; soli *expositæ* aut *in aquâ dulci servatæ* citissimè in album evanidus.

SUBSTANTIA gelatinoso-cartilaginea, succosa, tenerrima, ut, si stirps diu in aquâ servetur dulci, in mucum, liquescat.

Obs. Exsiccata chartæ arctè adhæret.

Si color textura habitusque respiciantur, arctissima intercedit inter *F. Usneam* hunc nostrum et inter *F. spinosum* *F. lichenoidemque* jamjam in prioribus hujus operis tomis delineatos affinitas. Cùm igitur hæ duæ species fructu in capsulis incluso sint præditæ, vix est dubitandum quin eadem quoque illi sit fructificatio; nec sustinui pro tali habere granula in fronde nidulantia; tutius existimans si suprâ in descriptione fructificationem adhuc latentem dicerem. Ab utrâque harum plantarum et simul ab *F. viscido* dignoscitur *F. Usnea* per frondem compressam ramosque distichos: substantia gelatinosa a plurimis reliquis distinguit. Hæc eadem efficeret ut cibo inservire posset *F. Usnea*, eodem quo *F. lichenoides* more, dummodò paritèr copiosè inveniretur.

a. <i>F. Usnea</i> , magn. nat.						
b. <i>ramus</i> , magn. auct.	-	-	-	-	-	6.
c. <i>ramus alter</i>	-	-	-	-	-	6.
d. <i>ejusdem particula</i>	-	-	-	-	-	4.
e. <i>semina?</i>	-	-	-	-	-	2.

Fucus costatus, root fibrous: stipes compressed, undivided, widening upwards, expanding at its apex into a single, membranaceous, simple, linear, entire, wrinkled, five-ribbed leaf.

On the western coast of South America. *Mr. Menzies*.

Perennial.

ROOT, apparently, consisting entirely of a mass of cylindrical ligneous fibres, not thicker than a sparrow's quill and scarcely two lines long, placed in a radiated manner, incurved, and mostly simple.

FROND solitary, rising with a *stipes* about an inch in length, marked from top to bottom with prominent nearly parallel striæ, cylindrical, and of the size of a crow's quill at its origin, but almost immediately becoming compressed, and soon after flat, gradually expanding too as it rises, but so slowly that at the top it is scarcely above a line in diameter; it here suddenly expands into a single, flat, undivided *leaf*, a foot and half or more long, nearly linear, about two inches wide, quite entire and slightly waved at the margin, at the base attenuated; the surface marked all over with irregular transverse wrinkles, and having five parallel ribs running through it from top to bottom.

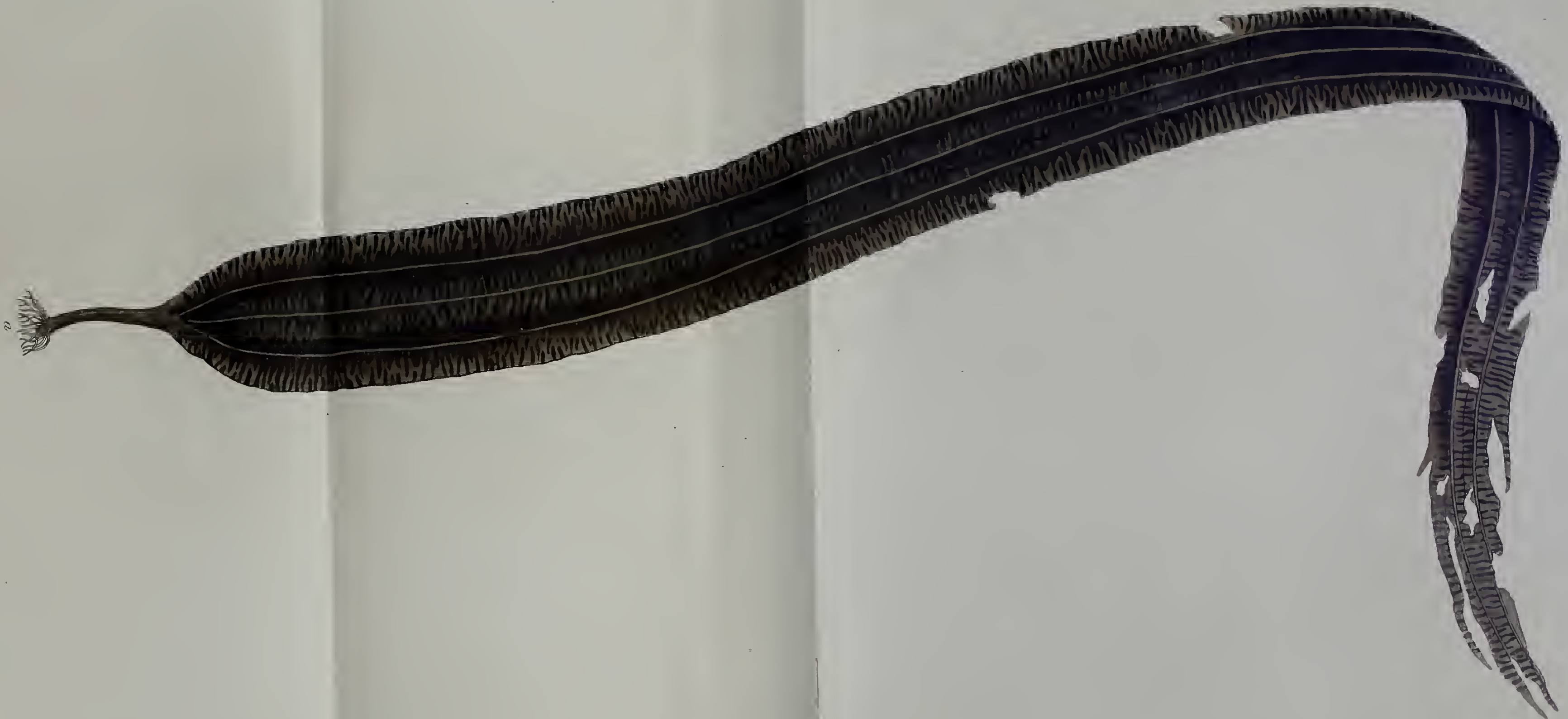
FRUCTIFICATION, unknown.

COLOR, a pale dirty yellow in the stipes, in the leaf olive-brown and semitransparent.

SUBSTANCE, of the stem woody, of the leaf membranaceous.

The only specimen which I have yet seen of this *Fucus* had been so much pressed as to have lost all its natural appearance, and even the ribs, the leading character of the species, were scarcely discernible. I have therefore been obliged to borrow most of my description from an account written by my friend, Mr. Menzies, of the recent plant; as my figure is copied from a beautiful drawing of his made at the same time. I am not aware that any other Naturalist has ever met with it. The similarity between *F. costatus* and *F. saccharinus* is very great, but the ribs of the stem of the former are widely different, and the striated stipes scarcely less so. Its substance approaches that of *F. Phyllitis*.

a. *F. costatus*, natural size.



Lucus costatus.

Fucus, radice fibrosâ; stipite compresso, indiviso, sursum versum dilatato; apice expanso in folium unicum, membranaceum, simplex, lineare, integerrimum, rugosulum, quinque-costatum.

HABITAT in occidentalibus Americæ Septentrionalis littoribus. *D. Menzies*.

Perennis.

RADIX tota, ut videtur, è fibris constans plurimis, teretibus, vix duas lineas longis, pennarum passerinarum crassitie, radiatim dispositis, incurvis, simpliciusculis.

FRONS solitaria, *stipite* assurgens sesquiunguiculari vel pollicari, per totam longitudinem striis extantibus subparallelis notato, ortu terete pennamque corvinam crassitie æquante, mox compresso, tandem plano, seque uti progreditur sensim dilatante, ita tamen lenitèr ut ipsum ad apicem diametro vix lineam æquet: hic panditur in *folium*, cui pro petiolo inservit, unicum, planum, indivisum, sesquipedale et ultrâ, propemodum lineare, duos circiter pollices latum, margine integerrimum lenitèrque undulatum, basi attenuatum, superficie ubique transversim rugosâ, et costis quinque parallelis a basi ad apicem totum folium percurrentibus notatum.

FRUCTIFICATIO ignota.

COLOR *stipitis* sordidè lutescens, *folii* fusco-olivaceus, subdiaphanus.

SUBSTANTIA in *stipite* lignosa, in *folio* membranacea.

Qui solus, quod scio, hactenus hunc *Fucum* legit, unum modò ejus exemplar secum attulit amicissimus *Menzies* ex itinere circa orbem redux. Hoc pressuræ plus æquo gravi olim suppositum formæ pristinæ multum amiserat, nec ullâ erat arte in figuram revocandum nativam. Quinimò costæ, quæ speciei characterem maximè essentialem præbent, ferè totæ evanuerant. Hinc coactus sum præcipuam descriptionis suprâ datæ partem mutuari ex aliâ a *Menziesio* ad specimina viva confectâ; delineatione simul ab ipso factâ pulcherrimâ iconem suppeditante. Haud opus est ut plura dicam. Nemo non agnoscet similitudinem quæ inter hanc stirpem et *F. saccharinum* intercedit maxima, et differentiam e fronde hujus enervi illius costatâ pendentem nemo prætervidebit.

2. *F. costatus*, magn. nat.

Fucus fruticosus, frond cylindrical, filiform, doubly pinnated with alternate branches, jointed, and reticulated on its surface with anastomosing veins: ramuli multifid, setaceous, bearing ovate, sessile capsules on their sides, and at their apices lanceolate siliquæ.

Fucus fruticosus. WULFEN, in *Jacq. Coll.* III. p. 159. t. 16. f. 1. ESPER, *Ic. Fuc.* I. p. 165. t. 87. LINN. *Syst. Nat. ed. Gmel.* II. p. 1389. *Syn. Fuc.* II. p. 394. (*excl. syn. Huds.*) WULFEN, *Crypt. Aquat.* n. 35. *Eng. Bot.* XXIV. t. 1686. CLEMENTE, p. 319.

F. heteroclitus. GMELIN, *Hist. Fuc.* p. 100. t. 4.

Ceramium Wulfenii. ROTH, *Cat. Bot.* III. p. 140.

Palma marina. GINANNI, *Op. Post.* p. 21. t. 20. f. 38.

On *Fucus concatenatus* and various other submarine bodies at Trieste. *Wulfen*.—Bayonne. *Prof. Mertens*.—About Algeziras, Tarifa, Cadiz, and the neighbouring coast. *Clemente*.—Common about Bantry. *Miss Hutchins*.—Antrim Coast. *Dr. Scott*.—Dorsetshire, Devonshire, and Cornwall, usually found growing on the stems of the larger Fuci.

Annual.—In fruit during the summer and autumn.

ROOT, a thin, expanded, blackish, callous base.

FRONDS, numerous from the same base, three or four inches long, cylindrical, or slightly compressed, as is principally the case in young plants, scarcely thicker than a sparrow's quill, and every where filiform, but with acuminate apices, they rise with a *stem*, which, though sometimes simple, is usually irregularly once or twice forked near its origin, with segments of nearly equal height, all from the base to the apices compoundly pinnated; *pinnæ* precisely similar to the stem in every respect except their smaller size, separated from each other by intervals of a line or a line and half, all alternate and patent, the lowest, which are longest, frequently an inch in length, the rest gradually shorter, so that the upper ones do not exceed a line; they are themselves furnished with a second smaller series, similar to the primary ones, and disposed in the same manner; and these in their turns also produce a third: the ultimate pinnulæ, or *ramuli*, are very short, setaceous, and multifid in a pinnated manner, with segments close to each other, yet still alternate; the apices in the summer, while the plant is in its highest vigor, end in a few extremely fine woolly fibres, in the earliest state of the frond they are incurved: the frond, under a microscope, is clearly seen to be divided into a number of short joints, by means of dark brown dissepiments, which anastomose every where in the most beautiful manner, and cover the whole surface with a singularly elegant network.

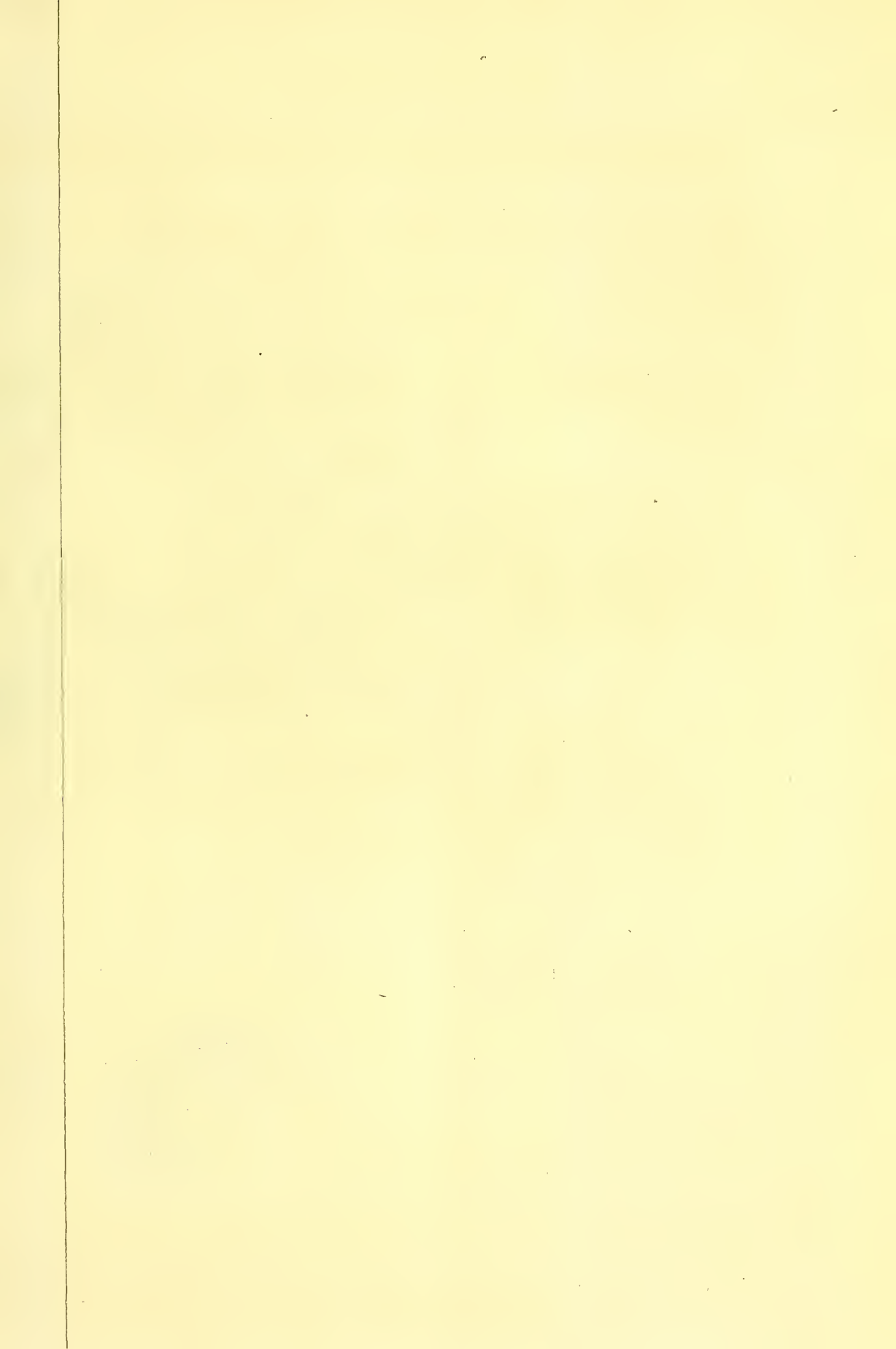
FRUCTIFICATION, of two kinds, each on different individuals: *the one* composed of ovate sessile capsules plentifully scattered about the pinnulæ, containing a few brown pyriform seeds, which at maturity escape by the bursting of the capsule at the apex; *the other* consisting of spherical seeds of the same color, imbedded in the apices of the ramuli, which then swell and wear the appearance of pods, from three to nine in each, and usually disposed in a straight line.

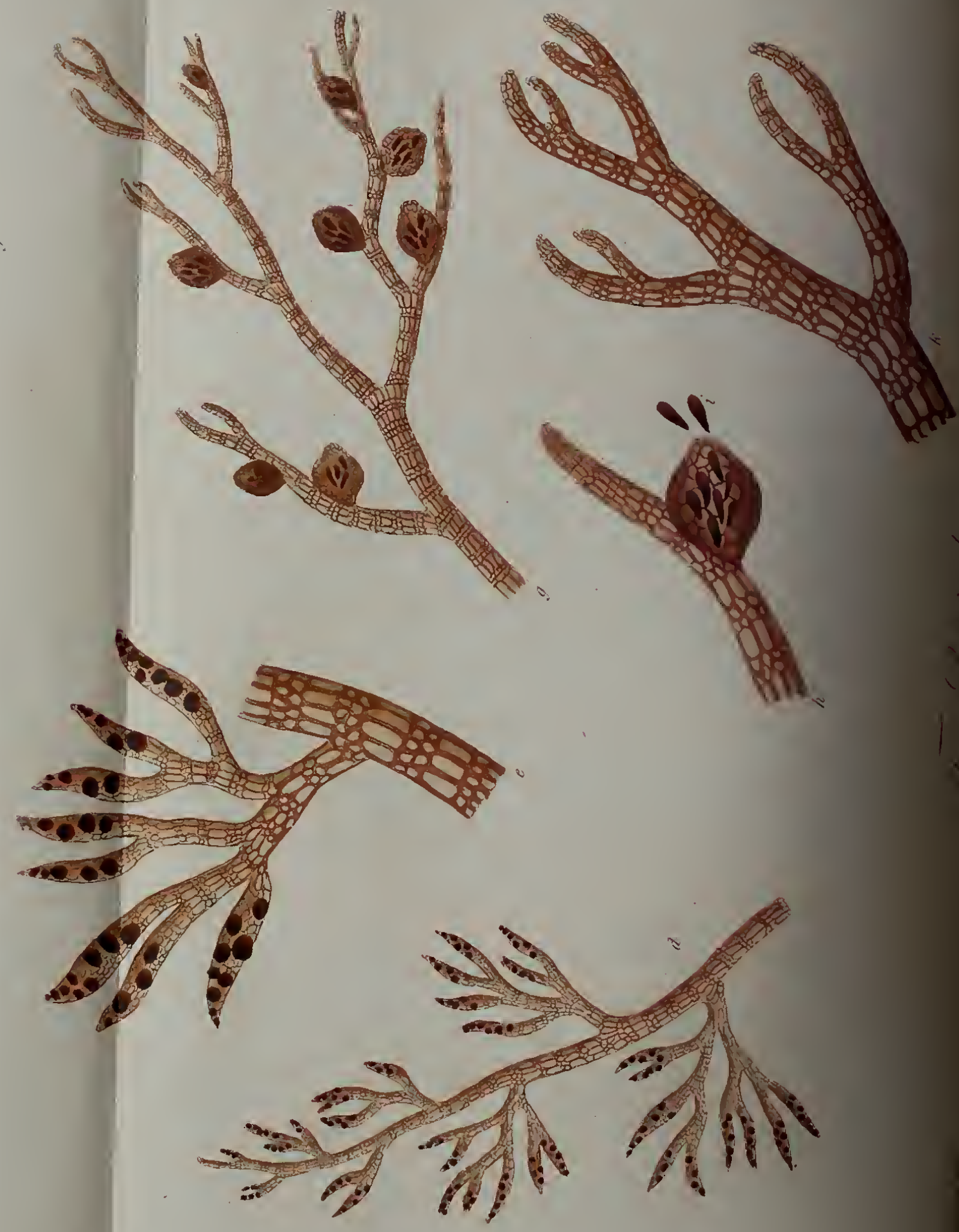
COLOR, a bright chocolate-brown, and semi-transparent in the recent plant; black when dry, and never afterwards recovering by immersion.

SUBSTANCE, cartilaginous, flexible, tough.

OBS. The whole plant resembles a beautiful shrub: the branches grow considerably more clustered in barren individuals than in fertile ones: in drying, it adheres rather firmly to paper.

Often as I have had occasion in the course of this work to mention the name of Miss Hutchins, and to express my thankfulness for the earnest kindness and liberality with which she has assisted me throughout the whole course of it, as well as my admiration of the extraordinary talents and no less extraordinary industry which she displays in the pursuit of Natural History, I have still always felt it impossible to express myself either on the one subject or the other in terms equal to my own wishes or to her deserts, and it is therefore with peculiar gratification I have lately observed, that one of those Botanists, of whom the present generation have most reason to be proud, has, though wholly unknown to her, just distinguished her in the most flattering manner, by dedicating to her, in the new edition of the *Hortus Kewensis*, a genus of phænogamous plants originally mixed with *Lepidium* and *Iberis*. It is to her that I am indebted for the drawing of *F. fruticosus* here represented, which was made by herself from the plant while recent, in which state alone it is possible to form any idea of the beautiful and truly wonderful structure of the species. Baron Wulfen has, unfortunately, altogether failed in this respect, from his having been deprived of similar advantages; but his figure excellently represents a dried specimen, with the branches expanded, as they are usually seen in Herbaria; and, as by far the greater proportion of Botanists are never likely to be acquainted with this *Fucus* except in that state, I have thought it right to make such an addition to my own plate. From the same cause, the noble author's description, though in most respects admirable, is defective as to the structure of the plant and its jointed and reticulated appear-





ance, nor are these points by any means mentioned with the care they deserve in the *Synopsis of the British Fuci*. To Ginanni's synonym above quoted I have not dared to refer without a mark of doubt, his description and figure being both equally unsatisfactory, as is, I am sorry to say, by far too frequently the case with those in his work. On the other hand, Gmelin's plant, which I had before entirely overlooked, appears to me to admit of no doubt, though he represents the frond considerably larger than I ever saw it, or than I find it described by any other author. If I am correct in this opinion, it is to him rather than to Wulfen that the credit is due of having first mentioned this *Fucus*, though we cannot but admit that, had it not been for the figure of the latter, it would most probably always have remained in the same obscurity as it did previously to its publication in Jacquin's *Collectanea*. If we are to continue, according to the practice of former Botanists, to regard the jointed frond as the great criterion whereby to distinguish a *Conferva* from a *Fucus*, it would be in vain to attempt to deny that *F. fruticulosus* must be arranged in the former of these genera. It is equally obvious that its closest affinity by far is with some plants at present called *Confervæ*: yet I have still considered it right to give it a place in this work, following my principle, not to reject whatever former Botanists had described as *Fuci*, and hoping soon to restore it to its congeners, when the end of my labors shall call upon me to attempt a task to which, however wanted, I feel myself miserably inadequate, a new arrangement of the submersed *Algæ*.

- a. *Fucus fruticulosus*, natural size.
- b. young specimen, with the ends of the ramuli incurved.
- c. plant with siliquiform fruit.
- d. branch of the same, magnified - - - 4.
- e. portion of this branch - - - 2.
- f. plant with capsules, natural size.
- g. branch of the same, magnified - - - 4.
- h. portion of this branch - - - 2.
- i. seeds - - - 1.
- k. tips of a barren branch - - - 3.
- l. part of a dried specimen, natural size.

227.—FUCUS FRUTICULOSUS.

Fucus, fronde terete, filiformi, alternatim decomposito-pinnatâ, articulatâ, venisque anastomosantibus reticulatâ; ramulis multifidis, setaceis: capsulis ovatis, sessilibus, lateralibus; siliquisque ramulorum ad apices lanceolatis.

Fucus fruticulosus. WULFEN, in *Jacq. Coll.* III. p. 159. t. 16. f. 1. ESPER, *Ic. Fuc.* I. p. 165. t. 87. LINN. *Syst. Nat.* ed. Gmel. II. p. 1389. *Syn. Fuc.* II. p. 394. (excl. *Syn. Huds.*) WULFEN, *Crypt. aquat.* n. 35.

Eng. Bot. XXIV. t. 1686. CLEMENTE, p. 319.

F. heteroclitus. GMELIN, *Hist. Fuc.* p. 100. t. 4.

Ceramium Wulfenii. ROTH, *Cat. Bot.* III. p. 140.

Palma marina. GINANNI, *Op. Post.* p. 21. t. 20. f. 38.

HABITAT supra varia corpora submarina Adriatici ad Tergestum Maris: inoculatum quoque parasiticè *Fuco concatenato* inveni. Wulfen.—Circa Algeciras, Tarifa, Gades, et alibi. Clemente.—Lapardi. D. Prof. Mertens.—In meridionalibus Britanniae oris, plerumque majorum Fucorum caulibus innascens.—In Hiberniae meridionalis littoribus frequens. Dna. Hutchins.

Annua.—Æstate et Auctumno ad Novembrem usque.

RADIX callus tenuis, explanatus, nigricans.

FRONDES ex eâdem basi plurimæ, subpalmares, teretes, vel, quod in plantis præcipuè junioribus accidit, hinc illic levitèr compressæ, pennâ vix crassiores passerinâ, et ubique filiformes, apicibus tamen acuminatis; caule

assurgunt nunc simplice, nunc, et quidem sæpius, vagè prope ortum bi-tri-furco, segmentis subfastigiatis, omnibus a basi ad apicem decomposito-pinnatis; *pinnæ*, quæ caulem omnibus modis præter molem minorem referunt, intervallo inter singulas lineæ vel sesquilineæ disjunguntur, cunctæ alternæ patentesque, inferiores sæpe pollicem longæ, hæc quoque longissimæ, reliquæ sensim breviores, ut summæ vix lineam exuperent; serie sunt instructæ minorum, quæ primariarum similes eâdemque etiam ratione dispositæ vice suâ alias adhuc minores gerunt: ultimæ pinnulæ, *ramuli* si libet dicendæ, perbreves sunt, setaceæ, atque pinnato-multifidæ, segmentis approximatis attamen alternis, æstate, dum planta maximè viget, in fibras aliquot tenuissimas lanosas apice desinentes, in plantâ juniore sæpe curvulæ: frons sub lente visa in articulos manifestè dividitur per dissepimenta approximata intensè fusca, quæ ubique pulcherrimè anastomosantia rete perelegans toti obducunt.

FRUCTIFICATIO duplex, in diversis individuis: hæc e capsulis constans ovatis, sessilibus, copiosè per pinnulas sparsis, semina aliquot badia angustè pyriformia includentibus, quæ maturitate per apicem disruptum effundunt; illa e seminibus ejusdem coloris, sphaericis, inuatis in apicibus ramulorum, tria ad novem linearitè disposita in singulis, qui tunc turgidi siliquas mentiuntur.

COLOR *recentis* amoenè badius, subdiaphanus; *exsiccata* nigricans.

SUBSTANTIA cartilaginea, lenta, tenax.

Obs. Tota planta fruticulum refert: rami in exemplaribus capsuliferis longè densius quàm in sterilibus conferti: per desiccationem chartæ satis arctè adhæret.

Amicitia debeo virginis lectissimæ, et jam sæpenuerò in hoc opere memoratæ, nunquam tamen eo a me quem meretur honore memorandæ, D^{næ}. Hutchins, quòd data mihi sit tandem facultas exhibendi talem hujus Fuci iconem qualis stirpem perpulchram mirificèque conflata eâ, quâ par est, curâ illustret. A Wulfenianâ in multis discrepat hæc nostra icon; illa enim, quamvis ipsa bona, plantam exsiccata refert, ramis artificiosè expansis, sicut in herbariis asservari solet. Similis quoque cujusdam particulam ego etiam huic tabulæ adjici curavi, Botanicis procul a maris littore degentibus obsequens, qui plurimi in eo modò statu viderunt. Fuci structura verè mira faciesque reticulata ægrè sunt in speciminiibus exsiccatis detegendæ; unde fit ut Wulfenius in descriptione cæteroquin optimâ nil horum memoret, et ut in *Fucorum Britannicorum Synopsi* non nisi obitèr perstringantur. De Ginannii Synonymo suprâ citato dubiè modò loqui sum ausus; descriptio enim subnulla icon de more rudis nil certi suppeditant. Alitèr autem sentio de Gmeliniano olim præterviso, frondem licet sistat majorem, quàm quæ mihi sese adhuc obtulit. Hinc optimus ille auctor rectius quàm divus Wulfenius *F. fruticulosi* inventor haberi meretur; nisi fortè Abbati honorem concedendum putemus, ut per quem solum orbi Botanico planta bene innotuerit. Si, sicut olim est habitum, structura articulata Confervas a Fucis distinguat, hæc stirps nostra est omnimodò illis in posterum annumeranda: propositi verò tenax, cum Fucis junxerint Gmelinus Wulfenius et alii, ipse etiam hic idem feci; mox suis restitutus affinis, quum Algas marinas in genera nova dispescere tandem conari, fine operis appropinquante, cogar.

a.	<i>Fucus fruticulosus</i> , magn. nat.						
b.	<i>planta junior, ramorum apicibus incurvis.</i>						
c.	<i>exemplar, fructu siliquiformi donatum.</i>						
d.	<i>ejusdem pinna</i> , magn. auct.	-	-	-	-	-	4.
e.	<i>hujus pars</i>	-	-	-	-	-	2.
f.	<i>exemplar capsuligerum</i> , magn. nat.						
g.	<i>ejusdem pinna</i> , magn. auct.	-	-	-	-	-	4.
h.	<i>hujus particula</i>	-	-	-	-	-	2.
i.	<i>semina</i>	-	-	-	-	-	1.
k.	<i>rami steriles apex</i>	-	-	-	-	-	3.
l.	<i>exemplar exsiccatum</i> , magn. nat.						

Fucus, caule terete, filiformi, fistuloso, erecto, simplice, fragili; apice coronato ramulis plurimis, oblongo-obovatis, granula plurima, sphaerica, muco nullo immixto, includentibus.

Fucus Peniculus. BROWN, M.S.S.

HABITAT in Freto, "King George's Sound" dicto. *D. Brown*.

Perennis?

RADIX, quantum ego detegere potui, nulla; sed planta conchis, quibus innasci solet, per caulis basin (colore hujus formæque ne minimum mutatis) firmissimè agglutinata adhæret.

FRONDES plurimæ unâ natæ, cæspitosæ, singulæ tamen revera discretæ, et singulæ caule assurgentes unico, sesquipollicari, terete, pennæ passerinæ crassitie, fistuloso, ubique filiformi, et semper indiviso, paritèrque nudo, excepto ad apicem, ubi coronatur duodecim et ultrâ ramulis (*folia vesiculasve* si mavis dicas) oblongo-ovatis, vix lineam longis, radiatim dispositis, basi ferè connatis, madore turgidis, per siccitatem variè depressis rugosisque, extrinsecus lævibus, intus foveitis congeriem granulorum minutissimorum, sphaericorum, albicantium, homogeneorum.

FRUCTIFICATIO:—nescio sanè quid de hac dicam, an pro tali sint habenda granula jam memorata, an potiùs, sicut in congeneribus, nihil adhuc compertum credamus.

COLOR in caule stramineus, in ramulis dilutè gramineus; *Soli objecta* tota albescit.

SUBSTANTIA membranacea et tenuis, aliquid tamen quod ad testarum naturam accedit prodens; *madefactæ* lenta et flexilis; *exsiccata* fragillima.

OBS. Per desiccationem, chartæ nequaquam adhæret: granula in ramulis inclusa neque sibimet ipsis nec frondis parietibus agglutinantur, sed singula distincta jacent, nullis fibris mucove, sicut in *Fucus* accidere solet, immixtis.

Per amicitiam Dⁿⁱ. Brown concessum est nobis hîc exhibere *Fucum*, multis modis insignitè a reliquis discrepantem, et quem nullus alius, quantum scio, Botanicus hucusque reperit, neque is in alio unquam loco natali, dempto unico illo suprâ memorato, ubi cuidam e *Mytilo* genere testæ semper adhærentem legit. Nomen speciei ab acutissimo accuratissimoque hoc nostro amico impositum servare non dubitavi; stirps licet per desiccationem pressuramque penitè amiserit quicquid olim similitudinis cum peniculo habuisse credimus, dum recens in nativo fluctuaret oceano. Structura colorque si respiciantur, manifestè associandus est *F. Peniculus* Caulerpi Lamourouxianis; sed, quod verè mirum, neutiquam est instructus caule repente, cæterarum instar hujusce generis specierum: imò etiam omni radice, seu fibrosâ sive discoideâ, penitè caret. Quod vix minùs mireris, ramuli non sunt in hac, sicut in reliquis inanes, sed repleti granulis, quorum de naturâ sententiam proferre non ausim, nihil unquam simili in aliâ quâpiam Algâ adhuc detecto. In rebus aded exiguis investigandis lens acerrima nil profuit; dubiumque manet et forsân in æternum manebit, vacuæ sint hæc an solida. Quantum per microscopium detegere licuit, videntur ex eadem, quâ frons ipsa, constare substantiâ, et facie potiùs gemmas quàm vera semina referunt. Ad efficacius distinguendum *F. Peniculum* a congeneribus haud opus est ut verbum addam; nequeo autem non iterùm memorare corneum illud, aut, ut ita dicam, conchoides, in hujus *Fuci* substantiâ, quod efficit ut inter Caulerpi, genus naturâ ad Zoophyta proximum, hæc species emineat, velut novus in rerum catenâ annulus Regnum Vegetabile cum Animali connectens.

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|---|---|---|---|----|
| a. <i>Fucus Peniculus</i> , magn. nat. | | | | |
| b. <i>frons unica</i> , seorsim visa, magn. auct. | - | - | - | 6. |
| c. <i>ramulus</i> | - | - | - | 4. |
| d. <i>idem horizontalitèr dissectus</i> | - | - | - | 3. |
| e. <i>granula olim in ramulo inclusa</i> | - | - | - | 1. |

Fucus Peniculus, stem cylindrical, filiform, hollow, erect, simple, very brittle; its apex crowned with a tuft of oblongo-ovate ramuli, containing numerous, spherical seeds, without any mixture of mucus or fibres.

Fucus Peniculus. BROWN, M.S.S.

In King George's Sound. Mr. Brown.

Perennial?

ROOT, as far as I have been able to discover, absolutely wanting; but the plant is firmly attached to the shells on which it grows by the base of the stem, without this being in the least expanded, or suffering any alteration whatever in appearance.

FRONDS, clustered, though in reality all quite separate, each rising with a single undivided stem, an inch and half in length, of the thickness of a sparrow's quill, fistulose, every where filiform, and every where naked, except that at the apex it is crowned with twelve or more ramuli (or perhaps they might more properly be called leaves or vesicles) of an oblongo-ovate form, scarcely a line long, nearly connate at their bases, disposed in a radiated direction, swollen when moist, when dry variously depressed and wrinkled, externally smooth, within containing a mass of very minute spherical whitish granules of the same nature and color as the frond.

FRUCTIFICATION.—I am quite at a loss what to say on this subject, and whether to consider the granules just mentioned as connected with the fruit, or to regard this as being hitherto quite unknown in the present as in the other species of the genus *Caulerpa*.

COLOR, pale yellowish in the stem; in the ramuli light grass-green, turning white in both cases from exposure to the sun.

SUBSTANCE, membranaceous and thin, but betraying an evident affinity to the texture of a shell or zoophyte: tough and flexible in a moist state, when dry very brittle.

Obs: In drying, it does not in the least adhere to paper: the granules in the ramuli lie quite unconnected with each other, and without the least mixture of mucus or filaments.

I am not aware that any Naturalist, except Mr. Brown, has ever met with the *Fucus* here figured, or that it has ever been found by him except in the place above mentioned, where all the specimens were attached to some species of *Mytilus*. Such is the accuracy of observation which my friend is universally acknowledged to possess, that I have had no scruple in continuing to the plant the name by him assigned to it, not doubting but in a recent state and in its native element it bears a resemblance to a painter's brush, though I am ready to admit, that it would be in vain to look for the similitude after it has been dried. Judging from its structure and color, *F. Peniculus* evidently belongs to the family of *Fuci* called by Lamouroux *Caulerpæ*, from all the other individuals composing which it differs most strikingly, not only in the absence of a creeping stem, the very circumstance whence the genus takes its name, and in wanting every appearance of root, but equally in having its ramuli filled with granules, upon the true nature of which I dare not venture to hazard an opinion, knowing nothing analogous to them in any other species of the submersed algæ. They appear, indeed, as far as my microscope will enable me to see, to be of the same nature as the frond, and have consequently rather the look of gemmæ than of seeds. Their extreme minuteness precludes all possibility of examining their interior, or even of ascertaining how far they are solid or hollow. It is needless to say a word as to distinguishing *F. Peniculus* from its congeners; but I must not omit to mention, that the stem is by far more brittle, and is in its texture more horny or shell-like than is the case with any other *Caulerpa*, and that, in a family of which all the members approach more than any of the rest of the Algæ to the Zoophytes, the species before us is a link that still more closely unites the Vegetable to the Animal Kingdom.

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|---|---|---|----|
| a. <i>Fucus Peniculus</i> , natural size. | | | |
| b. single frond, magnified | - | - | 6. |
| c. ramulas | - | - | 4. |
| d. the same cut open | - | - | 3. |
| e. granules contained in it | - | - | 1. |



b



a



c

e



e



d

Fucus Peniculus.

Fucus, caule terete, filiformi, fistuloso, simpliciusculo, prostrato, repente; ramis sparsis, erectis, simplicibus, teretibus, fistulosis, pinnatis ramulis patentibus, alternis, laxè imbricatis, cylindraceis, vacuis, apice in globulum tumescentibus.

HABITAT in Mari Rubro. *D. Salt.*

Perennis.

RADIX e caule repente hìc illic orta, primum simplex pennæque anserinæ ferè crassitie, qualiter ad trium et ultra pollicum longitudinem extenditur, mox enormiter bi-tri-furca, et apice in fibras plurimas breves stupiformes divisa.

FRONS caule instructa prostrato, repente, tripedali aut etiam longiore, oloris pennam mole ferè æquans, terete, per desiccationem tamen compresso et longitudinaliter sulcato, neque ullâ postea arte in pristinam revocando figuram, fistuloso, semel iterumve bifurco, segmentis longitudine variis, emittente intervallis tri-quadri-pollicaribus, attamen haud certis, e parte superiore ramos, ex inferiore radices supra memoratas, cætera nudo; rami erecti, sparsi, caulis prorsus similes, nisi quod duplo sint tenuiores nec semipedem longitudine exuperent, hi, quales sunt plurimi, indivisi, illi vagè bifurci, omnes a basi ad apicem pinnati ramulis distichis, patentibus, alternis, laxè imbricatis, ejusdem cum caule et ramis substantiæ, et ejusdem ferè cum his crassitiei, cylindraceis, apice tamen in sphæram ramulis duplo latiore tumentibus, tres lineas longis, intus vacuis, extrinsecus lævibus, nisi quando per desiccationem rugosi fiunt, quum fornicati etiam apparent, uno pariete alteri tenacissimè, sicut in *F. sedoide*, adhærente, ut e membranâ modò simplice constare videantur.

FRUCTIFICATIO nulla hactenus detecta.

COLOR in caule radiceque stramineus; in ramis ramulisque gramineo-viridis: in exsiccata nitet, quasi vernice oblitus: marcescentis vel Soli objectæ fit albus.

SUBSTANTIA membranacea, madentis lenta et flexilis: exsiccata fragilis.

Obs. Per desiccationem, nequaquam chartæ adhæret.

En tibi, lector, nova insupèr Caulerpæ Lamourouxianæ species et de cujus genere nullus dubitationi locus. Crescendi modus huic pinnatus, sicut in *F. scalpelliformi*, *F. pinnato*, *F. taxifolio* et *F. cupressoide*, rami apice incrassati quales habet *F. clavifer*, *F. Chemnitzia* et *F. cactoides*: utrisque junctis ab omnibus dignoscitur: proximius tamen *F. clavifero*, cujus varietatem ramulis subdistichis Novæ Hollandiæ ad oras legit D. Brown. Hanc stirpem Lamourouxii nomine insignivi, unicum quod penes me est observantiæ et honoris testimonium perhibens, erga virum acutissimum et quo nemo unquam melius de Caulerpis est meritus. Annon autem hujus speciei exemplar perpusillum ipse Lamourouxius exhibet sub *Caulerpæ obtusæ* nomine, in *Diario Botanico* II. t. 2. f. 3.? Nimis quidem dubito, ut hanc pro synonymo citem; neque descriptio enim nec icon characteres qui satis ad distinguendum valeant suppeditant.

a. *F. Lamourouxii*, magn. nat.

b. *frondis pars*, magn. auct. - - - - 6.

Fucus Lamourouxii, stem cylindrical, filiform, hollow, mostly simple, prostrate, creeping; branches erect, simple, cylindrical, hollow, pinnated with patent, alternate, loosely imbricated, empty ramuli, cylindrical, but swelling at their apices into a globule.

In the Red Sea. Mr. Salt.

Perennial.

ROOT, originating in various places without order from the creeping stem, simple at its origin, and as thick as a goose-quill, and continuing so for the length of three inches or more, when it becomes irregularly forked with two or three segments, the ends of which are composed of a number of short tow-like fibres.

FROND, furnished with a prostrate creeping stem, three feet or more long, nearly as thick as the quill of a swan, cylindrical, but from drying becoming compressed and longitudinally furrowed, and never recovering its original form by any subsequent immersion, fistulose, once or twice forked with segments of uncertain length, sending out, at intervals of three or four inches, but by no means regular in this respect, branches from its upper surface, and the roots above mentioned from its lower, in other respects naked; branches erect, scattered, entirely resembling the stem, except that they are not above half its thickness, nor more than six inches long, some, and indeed the greatest number, undivided, others irregularly forked, all from top to bottom pinnated with alternate, distichous, patent, loosely imbricated ramuli, of the same substance as the stem and branches, and nearly of the same thickness as these latter, three lines long, cylindrical till near their tips, where they swell into a globule almost double the diameter of the lower part; internally they are quite empty, and externally smooth, except that from drying they become wrinkled and concave, the two membranes adhering so closely together, that a common observer would take them only for one, as is the case with the ramuli of *F. sedoides*.

FRUCTIFICATION, at present unknown.

COLOR, pale yellowish, like that of straw, in the stem and roots; in the branches and ramuli grass-green: when dry the whole plant shines as if varnished; and from exposure to the sun turns quite white.

SUBSTANCE, membranaceous: tough and flexible, when wet; rather brittle after it has been dried.

OBS: It does not in the least adhere to paper.

The plate before us represents another new species of the family called by Lamouroux *Caulerpa*, and one respecting the genus of which there is no room whatever for doubt. Its mode of growth is pinnated, in which particular it agrees with *F. scalpelliformis*, *F. pinnatus*, *F. taxifolius*, and *F. cupressoides*, as it does with three other individuals of the same tribe, *F. clavifer*, *F. Chemnitzia*, and *F. cactifolius*, in having its ramuli singularly swollen at their apices. The union of the one and the other of these particularities admirably serves to keep it apart from all, and I know no better name by which I could call it, than that of the distinguished Naturalist who has so eminently contributed by his labors to illustrate the family to which it belongs, and to whose industry and acuteness I am most happy in having an opportunity thus afforded me of paying a public testimony. I am indeed not altogether sure that he has not himself already figured and described this very species in the 2d volume of the *Journal de Botanique*, t. 2. f. 3., but his specimen was too imperfect and unsatisfactory, for it to be possible to speak positively upon the subject. Among the Fuci already mentioned in this work *F. Lamourouxii* comes nearest to *F. clavifer*, and especially to a variety of this plant, in which the ramuli on many of the branches are nearly distichous, which has been brought from New Holland by Mr. Brown, and was unknown to me when I described the species.

a. *F. Lamourouxii*, natural size.

b. part of a branch, magnified - 6.



Fucus Lamouroucii.

Fucus, caule terete, filiformi, fistuloso, indiviso, prostrato, repente; ramis sparsis, erectis, simplicibus, teretibus, fistulosis, undique obsitis ramulis obtusè pyriformibus, arcè imbricatis, cavis.

HABITAT in Mari Rubro. *D. Salt.*

Perennis.

RADIX e caule repente hìc illic orta, ejusdem cum illo coloris atque substantiæ, primùm indivisa et nuda pennæque ferè anserinæ crassitie, qualiter ad pollicarem et ultrà longitudinem protenditur, mox in fibras divisa plurimas tenuissimas stupiformes abbreviatis albicantes.

FRONS caule instructa prostrato, repente, bi-tri-pedali, aut forsàn multùm longiore, integrum enim nunquam vidi, oloris pennæ ferè crassitie, filiformi, terete, per desiccationem tamen compresso varièque longitudinaliter rugoso, neque ullà postea arte in pristinam revocando figuram, fistuloso, semper, quantum ego compertum habeo, indiviso; emittente, intervallis subpollicaribus attamen incertis, e parte superiore ramos, ex inferiore radices suprà memoratas; cætera nudo; *rami* erecti, sparsi, caulis prorsus similes, nisi quòd duplo sint tenuiores nec pollicem longitudine exuperent, omnes indivisi, omnesque ab ipso ortu ad apicem densè vestiti *ramulis* undique imbricatis, patentibus, ejusdem cum caule ramisque substantiæ et basi ejusdem ferè cum his crassitie, sed statim in formam breviter ampullaceam intumescens, apice rotundatis, circiter lineam longis, extrinsecus lævibus, nisi quando per desiccationem rugosi fiunt: intus omninò vacuis.

FRUCTIFICATIO nulla hactenus detecta.

COLOR in caule radiceque sordidè stramineo-albicans; in *ramis ramulisque* gramineus; *exsiccatæ* nitens; *marcescentis* ubique albidus.

SUBSTANTIA membranacea, lenta et flexilis dum madet; sin exsiccet, fragilis.

OBS. Per desiccationem, chartæ nequaquàm adhæret.

Appropinquante hujus operis fine, accedit etiam indies majus majusque desiderium omittendi nihil quod ad Fucorum historiam ritè illustrandam pertineat; ne, si plura quàm quod ab æquo judice esset expectandum hìc menda reperirentur, id meâ incuriâ factum videretur; expertus enim probè scio quàm parùm in Dei Optimi Maximi operibus scrutandis vires humanæ proficiant et quàm non rarò vani ad irritum cadant conatus nostri, summâ curâ excogitati, summâ elaborati diligentia. Hinc ductus sum, *Caulerpis* jam omnibus quas pro indubiis habeo evulgatis, aliam quoque ex eodem genere haud ita certè distinctam speciem proponere; quantum enim in me est, nequaquàm vellem mancã relinquere familiam perpulchram, quæ se multis modis Algarum studiosis commendat; et, quamvis negandum non est quin *F. uvifer* hic noster nimis appropinquare videatur *F. clavigero*, alterâ tamen ex parte neminem oculatum latere possunt ea quæ inter utriusque habitum faciemque intersunt discrimina; et talia sunt hæc, qualia si non si speciem verè distinctam attamen proculdubio varietatem valdè insignem constituunt. Satis quidem dissimiles videntur utriusque in hoc opere datæ icones: nec specimina unquam ulla adhuc vidi has stirpes magis conjungentia. Rem igitur in medio relinquo, forsàn diu ibi relinquendam; ex iis enim qui maria longinqua invisunt navigatoribus perpauci naturæ opera studio dignantur, aut, si quã talibus rebus curam impendunt, conchas modò utpote coloribus sese commendantes pulcherrimis legunt. Plurimi decantatum illud Horatianum in ore habent, projectâ nihil esse vilius algâ; quare verisimiliter lustra aliqua imò sæcula elabentur, priusquam alteri tales duo, quales Vicecomes de Valentia Saltiusque, ad Maris Rubri littora, quæ *F. uvifer* habitat, accedant. Neque mirum, cùm tot tantæque extent ambages inter Fucos Britannicos quos indies ante oculos habemus, si tale quidpiam peregrinis rarò et vix nisi casu videndis eveniat.

a. *F. uvifer*, magn. nat.

b. *ramus*, magn. auct. - - - - - 6.

Fucus uvifer, stem cylindrical, filiform, hollow, undivided, prostrate, creeping; branches scattered, erect, simple, cylindrical, hollow, beset on all sides with obtusely pyriform, closely imbricated, hollow ramuli.

In the Red Sea. Mr. Salt.

Perennial.

ROOT, originating here and there from the creeping stem, which in substance and color it altogether resembles, at first undivided and simple, and about the thickness of a goose-quill, and thus continuing for the length of an inch or more, where it becomes split into a number of short, very thin, whitish, tow-like fibres.

FROND, furnished with a prostrate, creeping stem, two or three feet long, (or probably much longer, for I never saw it entire) almost as thick as a swan's quill, filiform and cylindrical, except after it has been dried, when it is compressed and variously wrinkled, and never by any means can be brought to its original appearance, it is also fistulous, and always, as far as I have seen, is undivided, but from its upper side sends out branches, and from its under the roots above mentioned; in other respects it is naked; branches erect, scattered, exactly like the stem, except that they are not more than half its thickness and do not exceed an inch in height, all undivided, and all from the very base to the summit thickly clothed with patent ramuli, which are imbricated on all sides, and of the same substance with the stem and the branches, which latter they also nearly resemble in thickness at their origin, but almost immediately become dilated and pyriform with a rounded apex; their length is about a line; externally they are smooth, except when drying makes them wrinkled; within they are hollow and empty.

FRUCTIFICATION, at present unknown.

COLOR, dirty yellowish-white in the stem and root; in the branches and ramuli a bright grass-green; glossy when dry; turning in decay to white.

SUBSTANCE, membranaceous, tough and flexible while wet, but brittle after it is dried.

Obs. In drying, it does not in the least adhere to paper.

A strong desire to omit nothing towards the close of my work, which may tend to throw light upon so very beautiful and so very interesting a family as the *Caulerpæ*, has induced me here to admit a plant, on the pretensions of which to be regarded as really distinct from *F. clavifer*, I own that I feel the greatest doubts. At the same time, however, that I have no scruple in making this acknowledgement, it is incumbent upon me on the other hand to say, that in appearance and habit these two Fuci are widely different; and that I never met with any specimens at all intermediate between those which I have figured. Most probably also I never shall; for the number of the naturalists who visit the Red Sea is so exceedingly small, and even in this number there are so very few who bestow any attention upon the vegetable productions of the Ocean, that a century or more may roll away before another Lord Valentia or Mr. Salt again explore those remote coasts; and, considering how much doubts and uncertainty envelope many of the Fuci of our own shores, it is scarcely possible to indulge in a rational hope that we shall live to see our difficulties attending upon these distant ones cleared away.

a. *Fucus uvifer*, natural size.

b. branch, magnified - - - 6.



Ficus urifera

Fucus, caule coriaceo, terete, filiformi, indiviso, pinnato ramis membranaceis, alternis, linearibus, planis, dichotomis, integerrimis: receptaculis oblongo-cylindraceis, tuberculosis, solitariis, in substantiâ ramorum propè basin innatis.

HABITAT. *Herb. Ellis.*

Perennis?

RADIX a me nondùm visa.

FRONS caule instructa circitèr pedali, ortu terete pennæque passerinæ crassitie, propemodùm filiformi, sensim tamen, uti progreditur, quanquam levissimè, attenuato, atque apices versus mutante figuram teretem compressâ, indiviso, sed ramis (folia forsàn rectiùs dicas) per totam longitudinem obsito plauis, linearibus, lineam latis, subspiralièr alternis, erecto-patentibus, singulis semiunguis vel unguis intervallo sejunctis, duos tresve pollices longis, nervo tenui nigricante percursis, plerumque ad mediam ferè a basi longitudinem indivisis, mox bis terve dichotomis, dichotomiarum angulis acutis, segmentis quoad longitudinem incertis, apice aliquantùm angustatis, attamen rotundatis, margine integerrimis, superficie poris mucifluis sparsim punctatâ, sub lente reticulatâ.

FRUCTIFICATIO sita ipsum juxta ortum ramorum, qui tunc intumescences factique teretes et caule duplò crassiores, receptaculorum lanceolatorum unguem ferè longorum formam induunt; superficies horum ubique granulata; granulis exiguis, approximatis, singulis apice poro unico pertusis, sub quo latet tuberculum sphaericum, inclusum, semina proculdubiò suo tempore fovens, quæ tamen omnia meis aufugerant exemplaribus.

COLOR in caule fusco-nigricans, in ramis dilutè virens non sine fuscinedine, subdiaphanus.

SUBSTANTIA, quæ caulì coriacea et dura, est in ramis membranacea, teuuis, atque tenera.

OBS. Per desiccationem non adhæret chartæ, nec faciem ullo modo mutat.

An hujus Fuci exemplar, quod hic delineatum rei botanicæ peritioribus submitto, sit, sicut in descriptione præcedente memoravi, tota stirps an solummodò ramus a plantâ longè majore divulsus, nulla mihi datur dijudicandi facultas; unum enim alterumque tantùm specimen adhuc vidi, et omnia inter se similia, cuncta quoque paritèr basi carentia, notulâ adjectâ nullâ, per quam liceret aliquid de verâ stirpis naturâ hariolari. Locus etiam ipse natalis, sicut pluries cum Fucis Ellisianis contigit, hactenus ignotus latet. Quod tuto est prædicandum, hæc alga specie reverà distincta satis superque a reliquis discrepat, inter quas nullam vidi fructu simili in eâdem frondis parte sito donatam. Ut verum tamen fatear, haud satis certum mihi constat qualis sit hujusce fructûs indoles; annon receptacula, seminibus jam elapsis, faciem aliquatenus mutârint, an primitûs, ut ab effœtis verisimile videtur, similes fuerint illorum, quibus gaudent Fuci, quos *genuinos* Botanici nuperi dixerunt. Hoc si ita sit, *F. zosteroïdes* hic noster, (cujus rami in aquâ fluitantes, liceat obitèr dicere, *Zostera marinæ* folia insignitèr referunt) manifestè erit in systemate locandus proximus *F. fibroso* et affinibus. Horum verò omnium folia plana non nisi in primâ stirpium infantiâ conspiciuntur, mox in ramos teretes, ætate progrediente, mutanda, et sic mutata fructum latura; sed talis vix est in *F. zosteroïdi* metamorphosis quærenda, utpote cujus fructificatio præsens statum frondis perfectum arguit. Colore et habitu hæc stirps maximè ad *F. Cabreram* aut *F. aculeatum*, utrumque cæteroquin toto cœlo abludentem, accedit.

a. <i>F. zosteroïdes</i> , magn. nat.						
b. ramus, magn. auct.	-	-	-	-	-	6.
c. ejusdem pars	-	-	-	-	-	4.
d. d. receptacula	-	-	-	-	-	5.
e. receptaculum horizontalitèr dissectum	-	-				3.

Fucus zosteroïdes, stem coriaceous, cylindrical, filiform, undivided, pinnated with membranaceous, alternate, cylindrical, linear, flat, dichotomous branches entire at their margins: receptacles oblongo-cylindrical, tubercled, solitary, imbedded in the substance of the branches near the base.

Found at - - - - - Ellisian Herbarium.

Perennial?

ROOT, I have not yet seen.

FROND, furnished with a stem about a foot long, at its origin quite cylindrical and of the thickness of a sparrow's quill, nearly filiform, yet still in some measure, though imperceptibly, lessening as it advances, and near the apex becoming compressed, undivided, but throughout its whole length beset with a series of flat linear branches, (or perhaps they may more properly be called leaves) a line wide, alternate, arranged in an irregularly spiral direction, separated by intervals of about five lines, two or three inches long, having a thin blackish midrib, generally continuing for about half their length from the base undivided, but afterwards twice or thrice dichotomous, with the angles of the divisions acute, the segments uncertain in point of length, the apices slightly attenuated yet still rounded, the margin quite entire, the surface dotted all over with scattered mucifluous pores, and appearing under a microscope marked with obsolete reticulations.

FRUCTIFICATION, placed upon the branches near their bases, causing them to swell and become cylindrical and take the form of lanceolate receptacles more than half an inch long and twice the thickness of the stem; these in their surface are everywhere granulated, so as to appear wholly composed of a number of minute granules, placed close to each other, each perforated with a single pore, under which lies imbedded a spherical tubercle, obviously destined to contain the seeds, though in my specimens all these had fallen out.

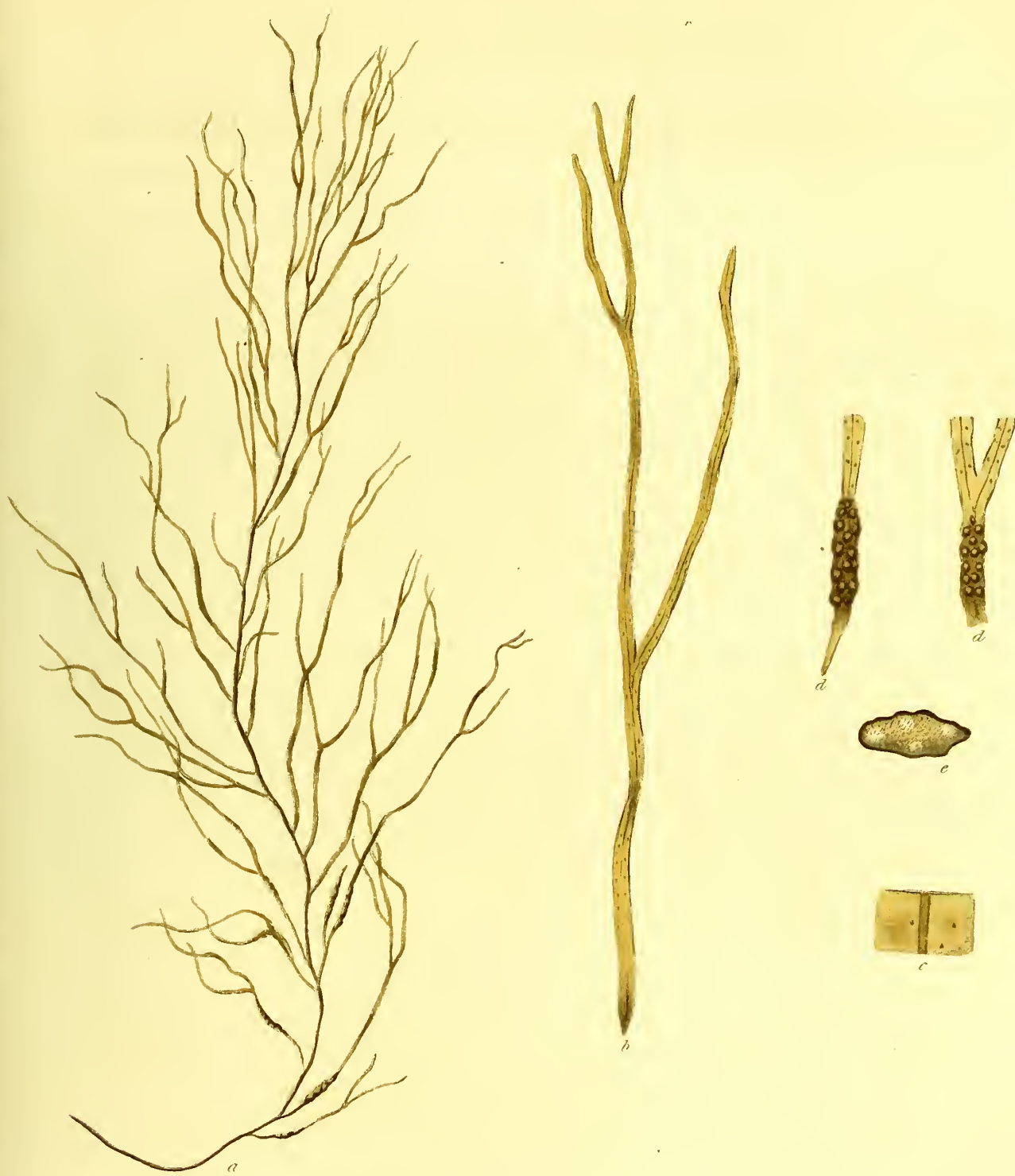
COLOR, blackish brown in the stem, in the branches pale grass-green, yet still with a brownish tinge and semi-transparent.

SUBSTANCE, coriaceous and hard in the stem, but membranaceous, thin and tender in the branches.

OBS. In drying, it does not in the least adhere to paper, or in anywise change its look.

In describing this *Fucus*, I have considered the specimen here represented as a perfect plant, and I hope that I have been right in so doing; but, at the same time, lest I should be the means of leading any of my readers into error, I feel it incumbent upon me to say that I am far from sure of such being really the case; having never seen any more of it than a few similar pieces, all of them preserved in the Ellisian Herbarium; where, as I have already more than once had occasion to observe, no remarks whatever are attached to the specimens, to assist in forming a judgment as to the size and nature of the plants, or as to the places whence they come. Yet still, whether the observations of succeeding Botanists should prove me right or wrong in this conjecture, and even if it should turn out that what I have figured is only a branch of a much larger frond, we may rest satisfied that the species is really distinct from all others hitherto described: not one of them being known to be furnished with fructification similar both in point of form and situation. As to the true nature of this fructification, I must acknowledge that I am far from feeling satisfied; for it is far from improbable that the receptacles, having all lost their seeds, may have undergone some change in their appearance, a thing by no means unusual among the marine algæ. Should it not be thus, we may safely conclude that they were originally like those of the family of *Fuci* called by Weber and Mohr *Fuci genuini*, and that *F. zosteroïdes* must be placed in the system next to *F. fibrosus* and its congeners. In all these, however, the flat leaves are to be seen only at the very base of the frond, or at the earliest stage of its existence, after which they turn into cylindrical branches; whereas it can hardly be conceived that such an alteration can under any circumstances take place in the plant before us, every part of which, except the stem, is quite flat, while the presence of fructification seems to indicate complete maturity. In color and habit, *F. zosteroïdes* comes very near to *F. Cabrera* and *F. aculeatus*, two *Fuci* widely different in every other point of view: its appearance, while floating in water, is so like that of *Zostera marina* that barren fronds might almost be mistaken for fragments of that plant.

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|---|---|---|---|---|----|
| a. <i>Fucus zosteroïdes</i> . natural size. | | | | | |
| b. branch, magnified. | - | - | - | - | 6. |
| c. part of the same | - | - | - | - | 4. |
| d. d. receptacles | - | - | - | - | 5. |
| e. horizontal section of a receptacle | - | - | - | - | 3. |



Fucus zosteroides.

Fucus, coriaceus; caule plano, lineari, indiviso, bi-tri-pinnato ramis alternis, patentibus, teretiunculis, filiformibus; ultimis dichotomis, fructiferis: receptaculis cylindraceis, moniliformibus, elongatis, in ramis propè apices innatis.

Fucus paniculatus. BROWN, M.S.S.

HABITAT in Australibus Novæ Hollandiæ oris. D. Brown.

Perennis.

RADIX a me nondùm visa.

FRONS caule assurgens unico, indiviso, sesquipedali, aut forsàn multo longiore, integrum enim nunquam vidi, plano, duas circiter lineas lato et unam ferè crasso, ubique lineari, lenitè flexuoso, ramis per totam longitudinem pinnato, cætera nudo; rami distichi, horizontales, alterni, intervallis unguicularibus sesquiunguicularibusve sejuncti, compressi, vix merulæ pennæ crassitiæ, lineares, inferiores, qui longissimi, tres et ultrà pollices longi, reliqui sensim magis atque magis sursum versus abbreviati, ut summi haud unguem exuperent, omnes indivisi, et ad duarum vel trium a basi linearum altitudinem nudi, exinde utrinque obsiti aliis, distichis, vix lineæ unius inter utrumque intervallo, patentibus, teretibus, filiformibus, filo emporetico tenuioribus, duos ferè pollices longis, pluries dichotomis, segmentis erectis, ultimis fructiferis:—apices ramorum frondis summæ parti proximorum sæpe incurvati atque involuti apparent, eodem ferè modo quo in *F. amphibio* accidere solet:—vesiculæ atque folia nulla.

FRUCTIFICATIO sita ad apices ramorum, qui tunc intumescences fiunt *receptacula* cylindrica, unguem et ultrà longa, tota e *tuberculis* constantia sphaericis, papaveris semine majoribus, innatis, approximatis, ut, ubicunque hæc sunt posita, rami moniliformes evadant et sint solito bis terve crassiores; tubercula singula extrinsecus poro minutissimo sunt pertusa, intus foveant semina aliquot oblonga, intense fusca, limbo pellucido cincta, unà cum fibris plurimis minutissimis, simplicibus, albidis.

COLOR, qui fuit in *recente* verisimillimè olivaceus, fit in *exsiccata*, et paritèr in *rursus madefacta*, ubique niger, nitorisque expers.

SUBSTANTIA coriacea, lenta, tenax.

OBS. Totius frondis peripheria enormitèr pyramidata: per desiccationem non adhæret chartæ.

Inter Fucos, qui, ut linguâ Botanicâ Botanici utamur, familiam *foliis unitis* præditam constituunt, plurimi ex iis Novæ Hollandiæ ad oras lectis ramos ferunt e caulis ancipitis lateribus planis exeuntes; dum contrà, in Europeis ferè omnibus ortum trahunt rami e caulis talis angulis acutis. In hoc discrepat a congeneribus Australasiacus ille hîc delineatus, quem, unà cum aliis a D^{no} Brown lectis, hujus benevolentia acceptum refero. Vir hic amicissimus in manuscriptis suis hanc stirpem *F. paniculatum* dixerat; nomen sanè aptissimum, et quod libentèr servâsem, nisi jampridem sit alii in hoc opere impositum speciei, quæ huic maximè est affinis, sed per caulem teretem receptaculæque verè paniculata affatim dignoscitur.

a. *Fucus spartioides*, magn. nat.

b. *ramus*, magn. auct. - - 6.

c. *receptaculum dissectum* - - 3.

d. *semen et filamenta* - - 1.

Fucus spartioides, coriaceous; stem flat, linear, undivided, twice or thrice pinnated with alternate, patent, subcylindrical, filiform branches, the ultimate ones dichotomous and producing the fruit in cylindrical, moniliform, long receptacles, innate in the branches near their apices.

F. paniculatus. BROWN, M.S.S.

On the southern coast of New Holland. *Mr. Brown*.

Perennial.

ROOT, I have not yet seen.

FROND, rising with a single undivided *stem*, a foot and half in length (or perhaps considerably longer, for I have never seen it entire), flat, about two lines wide and one thick, every where linear, slightly flexuose, pinnated from top to bottom with branches, in other respects naked; *branches* distichous, horizontal, alternate, separated by intervals of half an inch or three quarters of an inch from each other, compressed, scarcely so thick as a blackbird's quill, linear, the lowest, which are longest, three inches or more long, the rest gradually shortening upwards, so that the highest scarcely equal half an inch, all undivided and all naked for the first two or three lines from their base, after which they become beset on both sides with a series of others, which are also distichous, not more than a line apart from each other, patent, cylindrical, filiform, thinner even than packthread, yet almost two inches long, and repeatedly dichotomous with erect segments, of which the ultimate ones bear the fruit. The extremities of the shoots nearest the apex of the frond are incurved and rolled in, in almost the same manner as those of *F. amphibius*: neither vesicles nor leaves are to be seen upon the plant.

FRUCTIFICATION, placed upon the extreme ramuli, which then swell and become cylindrical *receptacles* of half an inch or more in length, entirely consisting of imbedded spherical *tubercles*, larger than poppy-seed, and situated close to each other, so that wherever they are found the shoots become moniliform, and twice or thrice thicker than ordinary: each tubercle is externally perforated by a very minute pore, and within contains a few, oblong, deep-brown seeds, surrounded by a pellucid limbus, together with a number of exceedingly minute, white, simple fibres.

COLOR, most probably an olive-green in the recent plant, but turning to an intense black, wholly destitute of gloss, from drying, and continuing so if again moistened.

SUBSTANCE, coriaceous, flexible, and tough.

OBS. The outline of the whole frond is irregularly pyramidal:—in drying it does not adhere to paper.

This *Fucus*, unlike a great proportion of its affinities brought by Mr. Brown from the coast of New Holland, produces its branches from the edges of the stem, and not from the flat sides, agreeing in this respect with the European species of the same division. The name above quoted as having been originally assigned to it by my friend, to whom I am indebted for it, is so excellently applicable, that I should undoubtedly have retained it, had it not already been applied in this work to another species, which is perhaps more than any allied to the present, but differs obviously, as well as essentially, in its cylindrical and short truly panicle receptacles.

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|---|---|---|----|
| a. <i>Fucus spartioides</i> , natural size. | | | |
| b. <i>branch</i> , magnified | - | - | 6. |
| c. <i>sections of a receptacle</i> | - | - | 3. |
| d. <i>seed and filaments</i> | - | - | 1. |



Fucus spartineoides.

Fucus, frondibus cartilagineis, teretibus, capillaceis, caespitosis, implicatis, geniculatis, vagè dichotomis; apicibus acuminatis: capsulis hemisphaericis, sparsis, lateralibus, sessilibus.

Fucus Helminthocortos. "HÆMMERTEN, *Diss. cum icone*," teste Rothio. *Fl. Fr. Ed. 2da*. II. p. 37.

Conferva Helminthocortos. LINN. *Syst. Nat. Ed. Gmel.* II. p. 1394.

Ceramium Helminthocortos. ROTH, *Cat. Bot.* II. p. 168. III. p. 157.

HABITAT in Mari Mediterraneo Corsicam alluente, rupibus calcareis aliisque corporibus marinis arctissimè adhærens. ROTH.

Perennis?

RADIX fibrosa, fibris repentibus, frondis similibus, variè ramosis et densè intertextis.

FRONDES ex eâdem basi plurimæ, in caespites arctos aliquot pollices latos pulvinatim congestæ, longitudine pollicares vel sesquipollicares, erectæ, strictæ aut lenitè flexuosæ, teretes, setâ porcinâ haud crassiores, filiformes, semel iterumve enormitèr dichotomæ, intervallo inter furcas exiguo, segmentis erecto-patentibus, subfastigiatis, insignitèr acuminatis.

FRUCTIFICATIO, quam nondùm vidi, constat, ut Rothii verbis utar, e capsulis hemisphaericis, sessilibus, exiguis, ad ramos lateralibus, solitariis, plerumque remotis et raris: harum *juniores* sunt e tenui membranâ conflatæ, crystallinæ, pellucidæ; *adultiores* subcoriaceæ, fuscae, obscuræ, siccitate atro-purpureæ, nitidæ et quasi politæ; demùm superficie inæquales, quasi tuberculosæ, et in medio vesiculam membranaceam, arachnoideo-pellucidam, subglobosam, pallidiorem protrudentes.

COLOR e fuscescente dilutè rubicundus, subdiaphanus; in aquâ dulci diu servatæ albicans; exsiccata saturior.

SUBSTANTIA cartilaginea ad corneam accedens, lenta, tenax.

OBS. Frons per lentem visa tota geniculata apparet, articulis brevissimis, dissepimentis obscuris, obsoletis:—exsiccata chartæ levitèr adhæret.

Multos jam annos in Galliâ est cognitus hic *Fucus*, ibi in medicinarum numerum a Pharmacopolis adhibitus. Ad vermes scilicet expellendos utuntur, et *Musci sive Corallinae Corsicae* nomine appellant. Quinetiam in *Florâ Gallicâ* et in *Encyclopediâ*, quam in ordinem redactam merito dicunt, descriptiones ejus extant, hujusque operis auctorem testem habemus, memoratum fuisse quadraginta ferè abhinc annos in Diario, cui nomen *Gazette de Santé*. Botanicis tamen Britannis vix adhuc innotuit, neque ullam vel descriptionem vel iconem a nostratibus datam invenio: nequivi etiam suprâ citare primum, qui eum memoravit, scriptorem, paritèr inscius qui fuerit tractatûs auctor aut quo nomine plantam designaverit. Neque equidem adhuc est mihi data facultas videndi dissertationem, quam ab Hæmmerten Erlangæ de hâc stirpe evulgatam, fide Rothii laudavi; sed sæpius expertus nimis scio quàm sit accuratus optimus *Catalectorum Botanicorum* auctor ut de plantâ suâ dubitem, præsertim cùm ab ipso Mertensio missa specimina acceperim. Piget quòd hæc specimina fructu careant, unde capsularum descriptionem a Rothio mutuari sum coactus. Nequeo enim pro talibus habere tubercula in icone exhibita, quæ potiùs a casu pendere et verisimillimè ab injuriâ aliquâ acceptâ crederem. Sed nihilominùs, ut verum fatear, dubito de hâc re; cùm omnibus paritèr filamentis adesse videam. Inter Fucos jam in hoc opere delineatos, maximè accedit *F. Helminthocortos Fuco crinali* et *Fuco Griffithsiæ*; his ob molem ferè eandem multo quidem magis affinis quàm *Fuco plicato*, quocum in *Catalectis Botanicis* conferendum docet Rothius. Hi verò utrique carent ramorum apicibus acuminatis, neque aliquid articulati in fronde reliquâ monstrant; fructificatione quoque omnes paritèr inter se discrepant.

a. *F. Helminthocortos, caespitosè crescens*, magn. nat.

b. *frons unica*, magn. auct. - - - - 6.

c. *ejusdem pars* - - - - 4.

Fucus Helminthocortos, fronds cartilaginous, cylindrical, capillary, growing in matted tufts, jointed, irregularly dichotomous; apices acuminate: capsules hemispherical, scattered, lateral, sessile.

Fucus Helminthocortos. "HÆMMERTEN, *Diss. cum icone*," teste Rothio. *Fl. Fr. Ed. 2da*. II. p. 37.

Conferva Helminthocorton. LINN. *Syst. Nat. Ed. Gmel.* II. p. 1394.

Ceramium Helminthocortos. ROTH, *Cat. Bot.* II. p. 168. III. p. 157.

In the Mediterranean Sea, on the coast of Corsica, found firmly attached to calcareous rocks and other marine bodies. Roth.

Perennial?

ROOT, wholly composed of creeping fibres in every respect similar to the frond, variously branched and thickly interwoven.

FRONDS, very numerous from the same base, clustered into compact cushion-like tufts some inches in width, an inch or an inch and half long, erect, straight, or slightly flexuose, cylindrical, not thicker than hog's bristles, once or twice irregularly dichotomous at short intervals, with erecto-patent segments of nearly equal height, all remarkably acuminate.

FRUCTIFICATION, which I have not yet seen, consisting, according to Dr. Roth, of small, hemispherical capsules, sessile upon the sides of the branches, solitary, generally few in number and remote from each other; when young, composed of a very thin membrane, white and pellucid; at maturity, subcoriaceous, brown and dark; or, if dried, of a blackish purple color and glossy as if polished; when old, their surface becomes unequal as if tubercled, and in the midst is discernible a small membranaceous pellucid paler vesicle.

COLOR, a light reddish brown, semitransparent, turning white if long kept in fresh water, and darker when dried.

SUBSTANCE, cartilaginous, inclining to horny, tough and flexible.

OBS. The frond, if examined through a microscope, appears to be from top to bottom divided into a series of extremely short joints by darker-colored obsolete dissepiments, but still completely retains its cylindricity:—in drying, it adheres very slightly to paper.

According to the Authors of the *Flore Française* and of the *Encyclopédie Méthodique*, *F. Helminthocortos*, though certainly but little if at all known among the Botanists of this country, has long been very generally so upon the Continent, and is there in common use with medical men as a vermifuge, under the name of the Moss or Coralline of Corsica. It appears to have been originally noticed in the *Gazette de Santé* for the year 1773, but by whom, or under what name, I am ignorant, having no opportunity of examining that work, which I have consequently been debarred from quoting above. With Hæmmerten's Dissertation, referred to by Dr. Roth, I am also wholly unacquainted; but I still feel no doubt as to the identity of the plant here figured with that intended by those authors, not only as agreeing with their descriptions, but as having been sent me by Professor Mertens, whose accuracy is as undoubted, as his friendship with Dr. Roth is universally known. Unfortunately these specimens are destitute of fruit; for I cannot consider as connected with the fructification the inequalities observable upon the surface of the frond, which rather appear to me the effect of casual injury, though their being present upon all the filaments seems to persuade an opposite opinion. Of the Fuci already described in this work, *F. crinalis* and *F. Griffithsia* are obviously the most nearly allied to *F. Helminthocortos*, and are indeed considerably more closely so than *F. plicatus*, with which it is compared in the *Catalecta Botanica*. They are also the only ones for which it can possibly be mistaken; but both these have very dissimilar fructification, and also differ in wanting the pointed apices of the frond as well as in having in no part of them the least tendency to a jointed appearance.

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|--|---|---|---|----|
| a. Tuft of <i>F. Helminthocortos</i> , natural size. | | | | |
| b. single frond, magnified | - | - | - | 6. |
| c. part of the same | - | - | - | 4. |



Fucus Helminthocortus.

Fucus, fronde sub-gelatinosâ, capillaceâ, ramosâ; ramis vagè alternatim secundis, remotiusculis, acuminatis.

Conferva faniculacea. *Fl. Ang.* p. 594. *WITH.* IV. p. 130. *LINN.* *Syst. Nat. Ed. Gmel.* II. p. 1394.
Conferva marina faniculacea. *DILL.* *Hist. Musc.* p. 16. t. 2. f. 8.

HABITAT in rupibus maritimis, a maris recessu liberis, in Monâ Insulâ, ubi etiam Fucis inter maris rejecturas innascens reperitur. *Dillenius*.—In Cornubiâ. *Hudson*.—Juxta Kiel, in Holsatiâ. *D. Mohr*.—In Scotiâ littoribus occidentalibus, haud infrequens.

Annua?

RADIX nulla, nisi frondis basis perpaullum explanata.

FRONDES ex eâdem basi plurimæ, pedales aut bipedales, teretes, nunc Passeris nunc Merulæ pennæ crassitie, filiformes, vel apices versus aliquantum attenuatæ, flexuosæ, indivisæ, sed ramis per totam longitudinem obsitæ homogeneis, suique prorsus similibus, nisi quoddam sint duplo tenuiores, distichis, absque normâ alternatim secundis, ortu horizontaliter patulis, intervallo inter singulos nunc duarum triumve linearum, nunc pollicis sesquipollicisve, quoad longitudinem quoque incertissimis, his pedaliibus illis vix pollicaribus, longis brevibusque nullo ordine servato immixtis, plerisque obsitis serie minorum simili ratione dispositorum, quos semper simplices et nunquam quartam seriem ferentes vidi; rami ultimi vix semiunguiculares; apices omnibus acuminati.

FRUCTIFICATIO nulla hactenus visa.

COLOR dilutè lutescens viridi perfusus, diaphanus; per desiccationem intensius viridis non sine fuscinedine.

SUBSTANTIA membranaceo-gelatinosa, debilis, ætate rigidiuscula.

OBS. Exsiccata adhæret chartæ, quam colore fusco tingit:—varietatem e mari Balthico misit Mertensius, fronde per desiccationem nigricante.—Sub lente maximè augente visa pulchrè ubique reticulata videtur.

Quadraginta ferè jam sunt elapsi anni ex quo descripsit Dillenius ærique insculpi curavit stirpem in hâc tabulâ depictam, quæ nihilo tamen minus ad hoc usque tempus Botanicos plurimos latuit; ut inter auctores vix unus sit et alter qui illam memoraverit, hodiernique plurimi pro algâ dubiâ vel saltem dubiæ sedis intactam præterierint. Nulla quoque ejus extat icon præter Dillenianam, quæ quidem, reliquarum instar in *Historiâ Muscorum*, bene exprimit plantæ characterem, sed coloris expers et absque microscopii ope confecta nequaquam satis ad distinguendam a congeneribus valet. Quod ad descriptionem attinet, res in eodem est statu; Hudsonus enim Witheringius et Gmelinus non nisi verba Dilleni iteraverunt, nomine stirpi specifico adjecto. Magis aliquid, haud ille tamen multum, præstitit Lightfootius. Hi omnes hanc plantam Confervis associaverunt, respicientes frondis colorem texturanique, et quoddam filamentis confervoides tota constet. Aliter autem censuit amicissimus Dillwynius, cujus in eximiâ *Confervarum Britannicarum Monographiâ* omnino prætermittitur, Fucis, illo judice, propter frondem nullibi articulatam in posterum adjungenda. Ne igitur huc et illuc vicissim missa utrumque opus, illius scilicet de Confervis nostrumque de Fucis, pariter aufugiat, et ne, uti vulgò aiunt, inter duas sellas fiat decidium, non dubitavi hîc admittere; quamvis dum fructificatio indeprehensa manebit nihil erit certi de loco in systemate dicendum. Formâ ad *F. viridem* accedit; sed ramorum dispositione toto cœlo abludit; neque color utrique idem, nec *F. subtilis*, quantum adhuc vidi, est in hoc, illius instar, mutabilis.

a. <i>F. subtilis</i> , magn. nat.					
b. <i>rami pars</i> , magn. auct.	-	-	-	-	6.
c. <i>ejusdem portio</i>	-	-	-	-	4.

Fucus subtilis, frond sub-gelatinous, capillary, branched; branches growing irregularly in parcels on different sides of the frond, rather remote, acuminate.

Conferva fœniculacea. *Fl. Ang.* p. 594. *Fl. Scot.* II. p. 981. *WITH.* IV. p. 130. *LINN. Syst. Nat. Ed. Gmel.* II. p. 1394.

Conferva marina fœniculacea. *DILL. Hist. Musc.* p. 16. t. 2. f. 8.

Found in the Isle of Anglesea, not only growing upon the rocks, but also upon the Fuci among the rejectamenta of the sea. *Dillenius*.—In Cornwall. *Hudson*.—Not uncommon on the western coast of Scotland.—*Bantry Bay*. *Miss Hutchins*.

Annual?

ROOT, none, except the base of the frond a little expanded, but without any apparent alteration in its color or substance.

FRONDS, numerous from the same base, from one to two feet long, varying in thickness from the size of a sparrow's quill to that of a blackbird's, cylindrical, and filiform, or only slightly attenuated towards the apices, flexuose, undivided, but beset from top to bottom with *branches* of the same nature and substance, and entirely resembling it, except in not being more than half its thickness; these are distichous, arranged without regularity in alternate patches, two or three on one side, and then as many on the other, at their origin between horizontal and patent, separated by intervals of two or three lines each, very uncertain also in point of length, some extending to a foot, others to not more than an inch, and long and short mixed without any kind of order, most of them furnished with a set of smaller ones arranged in the same manner: these latter, as far as I have seen, are always simple and never produce a fourth series: the ultimate branches are scarcely a quarter of an inch in length: the apices of all are acuminate.

FRUCTIFICATION, none yet discovered.

COLOR, pale greenish yellow, transparent, turning to a darker and more decided green with a tinge of brown when dried.

SUBSTANCE, between membranaceous and gelatinous, tender, but rather rigid when old.

OBS. In drying, it adheres to paper and stains it brown:—Professor Mertens has sent me a variety from the Baltic, with the frond blackish now it is dry:—if examined in a recent state under the microscope, the whole plant is seen to be beautifully reticulated.

Though the subject of the present plate has been described ever since the time of Dillenius, I have met with few Naturalists who have been at all acquainted with it, nor do I find any figure of it, excepting the one given in the *Historia Muscorum*, which, although certainly characteristic, like most others in that work, still, from being devoid of color and unaccompanied with any magnified parts, is little qualified to throw much light upon the plant. In point of description also, Hudson, Gmelin, and Withering have done no more than copy the words of Dillenius., and what Lightfoot says is short and unsatisfactory. Its having been by all these authors referred to the genus, *Conferva*, is very far indeed from surprising: the texture, the color, and the tenuity of the filaments seem to justify such an arrangement, and I should have been well contented to have suffered it to remain there, had not my friend, Mr. Dillwyn, in his admirable monograph of the British species of that obscure genus, thought it best to remove it to the Fuci, by reason of the absence of all jointed appearance in the frond. That it may not therefore remain unpublished, as well in this work as in his, I here figure it; but have little more to remark concerning it than that in form it is nearly allied to *F. viridis*; but, independently of its very dissimilar ramification, is distinguishable by its different color, and wants, I believe, the great peculiarity of that *Fucus*, its changeable color, though I would not venture to speak positively upon this subject, never having myself seen the plant recent, and being at present, by the illness of Miss Hutchins, deprived of the opportunity of consulting the only friend from whom I should be likely to obtain satisfactory information.

- | | | | | |
|--|---|---|---|----|
| a. <i>Fucus subtilis</i> , natural size. | | | | |
| b. <i>part of a branch</i> , magnified | - | - | - | 6. |
| c. <i>portion of the same</i> | - | - | - | 4. |



Fucox subtilis.

Fucus, fronde cartilagineo-gelatinosâ, terete, filiformi, ramosâ; ramis vagè dichotomis, apice bifurcis acuminatisque; omnibus ubique tuberculis; tuberculis oblongis, fibrosis, seminiferis.

Ceramium tuberosum. ROTH, *Cat. Bot.* II. p. 162. III. p. 112.

Conferva rhizodes. EHRHART, in *Herbario suo*.

Conferva gracilis. WULFEN, *Crypt. Aquat.* n. 23.

Conferva verrucosa. Engl. *Bot.* XXIV. t. 1688.

HABITAT, haud ita frequens, Britanniarum ad oras, Fucis majoribus, præsertim *F. serrato* et *F. ericoidi*, plurumque innascens.—In Cornubiâ. D. *Stackhouse*.—Apud Sidmouth, in Devoniâ. D^{na}. *Griffiths*.—In sinu, Bantry Bay dicto. D^{na}. *Hutchins*.—Kiliæ. D. *Mohr*.—In Norvegiæ littoribus. D. *Wahlenberg*.—Tergesti, supra Fucos. *Wulfen*.—E Mari Mediterraneo accepit *Prof. Mertens*.

Annua.

RADIX callus exiguus, dilatatus.

FRONS palmaris, aut etiam pedalis, sesquipedalis, et ultrâ, teres, filiformis, Motacillæ Troglodytis pennâ vix crassior, sursum versus aliquantum attenuata, ramosissima, ramis his, et quidem plurimis, alternis, illis oppositis, aliis subsecundis, plerumque aliquot linearum intervallo sejunctis, horizontaliter patulis, inferioribus, qui longissimi sunt, dodrantalibus, summis subpollicaribus, sed hoc haud certum, plerisque semel iterumve dichotomis, furcarum angulis leniter rotundatis, omnibus obsitis aliis minoribus, eâdem quâ primarij ratione dispositis, et his aliquandò tertiam brevissimorum sparsorum seriem ferentibus; apices cunctis acuminati; rami summi ut plurimum desinunt in furcam, segmentis abbreviatis, subæqualibus, leniter incurvis; tota frondis superficies verrucosa, et hinc torulosa et subangulosa.

FRUCTIFICATIO sita in *tuberculis* jam memoratis, quæ exigua sunt, frondi concolora, elliptica, et approximata, distincta tamen; tota e fibris constantia lineari-clavatis, articulatis, arcuè sibi invicem appressis, parallelis, apice incrassato frondis superficiem spectante: his immixta jacent semina aliquot pyriformia, intensè fusca, apice tamen acuto pellucido.

COLOR, qui *recentis* est dilutè fucus flavescens pertusus, fit per desiccationem olivaceo-viridis et interdum nigrescit.

SUBSTANTIA cartilaginea, ad gelatinosam accedens, debilis et flaccida, tactu lubrica.

OBS. Frons exsiccata ad dimidiam molem aut etiam minorem contrahitur, formamque quam recens habuit penitus amittit:—chartæ arcuè adhæret coloreque illam dilutè fusco tingit: planta junior pallidè lutescit superficieque est subæquali, verrucis nullis aut minutissimis, tota quoque est tunc gelatinosa obduciturque villis concoloribus quorum longitudo in diversis exemplaribus multum ludit; in uno, quod e Mari Mediterraneo ad Mertensium misso hujus benevolentia debeo, mole non cedunt iis in *Confervâ villosâ* et in *Fuco pedunculato* notabilibus: hi, stirpe adultâ, decidunt: sub lente visi fibras referunt e quibus tubercula constant, et e quibus, nisi multum fallor, constat tota frons in primo ætatis stadio.

Nullibi antea, quod scio, Fucis annumerata est hæc stirps, quam tamen plus unâ vice dum hoc opus scriberem in partes vocare sum coactus, suadente *F. pedunculato* aut alio quopiam ex affinibus, quibuscum, ni fallor, *F. rhizodes* hic noster omnino erit in posterum conjungendus. Insigniter inter se discrepant varia hujus Algæ specimina, hæc bipedalia, illa vix totidem pollices longa, crassitie quoque qualis longitudinem deceat; hæc ramis plurimis, illa paucissimis instructa; neque hoc solum in diversis individuis valet, verum etiam in eodem in diversis suæ ætatis stadiis maxima dissimilitudo. Plantæ juniori frons tenera, gelatinosa, lævis, tota fibris villosis obducta; adultiori nulla talium vestigia; sed ubique nigrescit, et rigida est, et tuberculis verruciformibus exasperata. Quod in hac tabulâ depingitur exemplar plantam mediæ ferè ætatis sistit. Filamenta *F. rhizodi* tubulosa tribuit Rothius, sed ego semper solida vidi, parte intimâ in mucum solutâ, sicut in aliis plurimis algis; et ita se rem habere censeret aliquis ex analogiâ judicans. Clarissimus idem auctor summo jure perhibet frondem ubique per tubercula inæqualem videri primo aspectu oculoque inermi articulatam quandam faciem præ se ferre; se tamen frustrâ, microscopii ope adhibitâ, veros quæsisse articulos, et dissepimenta reapse nulla adesse credere. Huic quoque sententiæ assentiunt Wulfenius Smithiusque, qui nihilo tamen minus plantam in operibus suis Confervarum numero associaverunt. Dillwynius autem noster aliter statuit, et hanc ob causam *F. rhizodem* unâ cum *F. subtili* e *Monographiâ* suâ exclusit, qui ambo igitur in hanc admittuntur.

a. *Fucus rhizodes*, magn. nat.

b. *frondis pars*, magn. auct.

6.

c. ejusdem particula	-	-	5.
d. fibræ et semina	-	-	4.
e. fibræ	-	-	3.
f. eadem	-	-	1.
g. semina	-	-	2.
h. unum ex iisdem	-	-	1.

235.—FUCUS RHIZODES.

Fucus rhizodes, frond between cartilaginous and gelatinous, cylindrical, filiform, branched; branches irregularly dichotomous, forked and acuminate at the tips; the whole of them covered all over with oblong fibrous tubercles bearing the seeds.

Ceramium tuberculosum. ROTH, *Cat. Bot.* II. p. 162. III. p. 112.

Conferva rhizodes. EHRHART, MS. in his *Herbarium*.

Conferva gracilis. WULFEN, *Crypt. Aquat.* n. 23.

Conferva verrucosa. *Engl. Bot.* XXIV. t. 1688.

Found, but not very commonly, on different parts of the British coast, generally attached to the larger species of Fuci, especially *F. serratus* and *F. ericoides*.—In Cornwall. *Mr. Stackhouse*.—At Sidmouth. *Mrs. Griffiths*.—Bantry Bay. *Miss Hutchins*.—Kiel, in Holstein. *D. Mohr*.—Shore of Norway. *Dr. Wahlenberg*.—Trieste, upon Fuci. *Wulfen*.—Sent from the Mediterranean to *Professor Mertens*.—Shore at Brighton. *Mr. Borrer*.

Annual.

ROOT, a small, expanded, callous base.

FROND, varying in length from four inches to a foot, sometimes extending to a foot and half or more, cylindrical, filiform, scarcely thicker than a wren's quill, slightly attenuated upwards, much and irregularly branched; branches mostly alternate, but some opposite, and others subsecund, generally separated by intervals of a few lines each, between horizontal and patent, the lowest, which are longest, extending to nine inches in length, the highest to about one, but this is far from certain; the greater part of them are once or twice dichotomous, with the angles of the divisions slightly rounded, all are slightly beset with others still smaller arranged in the same manner as the primary ones, and sometimes there is also a third series, which are scattered and very minute: the apices of the whole of the branches are acuminate; the upper branches usually are forked at their extremities, with short, nearly equal, slightly incurved segments; the surface of the frond is warty all over, so much so as to be rugged and inclining to angular.

FRUCTIFICATION situated in the tubercles just mentioned, which are small, of the same color as the frond, elliptical, and placed near each other, though still separate; they wholly consist of fibres of a shape between linear and clavate, jointed, pressed close to each other, parallel, their thickest end pointing outwards: mixed with these lie a few pyriform seeds, dark brown, but with the sharp end pellucid.

COLOR, pale brown tinged with yellow in the recent plant, but turning to an olive green from drying, and in some specimens to blackish.

SUBSTANCE, cartilaginous, approaching to gelatinous, flaccid, slippery to the touch.

OBS. In drying, the frond shrinks to not more than half its original size, and altogether loses the appearance it had while recent:—it adheres firmly to paper, which it tinges with a pleasant pale-brown color:—the young plant is light yellow, with nearly an even surface, and almost, if not wholly, destitute of warts; it is also then quite gelatinous and covered all over with downy fibres of the same color as itself, which vary greatly in length in different individuals,



Fucus rhizodes.

and in one sent me by Professor Mertens from the Mediterranean are as long and as remarkable as those of *Conferva villosa* or *Fucus pedunculatus*: when the plant is full grown, they fall off: if examined under a microscope they resemble those which compose the tubercles, and of which it appears to me that the whole surface of the frond consists in its earliest state.

Though I am not aware that this plant has ever before been described as a *Fucus*, I have very frequently had occasion to mention it in the course of this work, while speaking of *F. pedunculatus* and others, which I consider as its affinities, and adjoining which there appears to me no question as to the propriety of its being hereafter placed. Different individuals vary greatly in the size of the frond as well as in its ramification, besides which the young tender yellowish gelatinous plant all over covered with fibres is in itself so unlike the appearance caused by age when it is blackish, naked, rigid and full of warty tubercles, that experience is wanted to enable us to recognize them as the same. The specimen here figured represents it in a middle state. Dr. Roth describes the filaments as tubular, which does not coincide with what I have observed, nor is it to be expected from the nature of the plant. He very justly observes that the numerous inequalities of the stem and branches give to the naked eye an appearance of joints, but that on more accurate observation aided with the microscope he cannot find that any such really have existence. The absence of them has also been noticed by Wulfen and Dr. Smith, as well as by Mr. Dillwyn, who on this account thought it proper to remove *F. rhizodes*, as he had done *F. subtilis*, from the *Confervæ*, with which both of them had been previously arranged.

a. <i>Fucus rhizodes</i> , natural size.							
b. <i>part of the frond</i> , magnified.	-	-	-	-	-	-	6.
c. <i>portion of the same</i>	-	-	-	-	-	-	5.
d. <i>fibres and seeds</i>	-	-	-	-	-	-	4.
e. <i>fibres</i>	-	-	-	-	-	-	3.
f. <i>the same</i>	-	-	-	-	-	-	1.
g. <i>seeds</i>	-	-	-	-	-	-	2.
h. <i>one of the same</i>	-	-	-	-	-	-	1.

Fucus pilulifer, frond cartilaginous, compressed, branched; branches alternate, distichous, the ultimate ones setaceous and spiniform: spherical capsules sessile upon the ramuli near their apices.

At Nootka Sound. Mr. Menzies.

Perennial?

ROOT, I have not yet seen.

FROND, half a foot or more in length (perhaps even much longer, for I have never met with it entire, and I am far from certain whether the specimen here figured is a whole plant or merely a branch) cylindrical at its lower part and for about an inch upwards, then becoming compressed, and at the top quite flat, yet still everywhere preserving nearly the same thickness about equal to that of a blackbird's quill; it is much and by no means regularly branched; branches generally alternate, distichous, patent, three inches or more long, but in this respect uncertain, long and short being mixed together without any order, all pinnated with others, which are disposed in the same way, but smaller, and rather remote; and these bearing a third series, or *ramuli*, exceedingly thin, not above a line long, and merely like spines:—the lower part of the stem is rough with the remains of broken branches.

FRUCTIFICATION, black, spherical *tubercles*, larger than poppy-seed, sessile upon the ramuli near their apices, mostly solitary, but sometimes placed two together, containing a mass of pale purplish seeds of an irregularly oblong shape imbedded in colorless mucus.

COLOR, in such specimens as I have seen, blackish brown, but somewhat paler towards the tips, I should, however, feel no doubt but that in the recent plant it is a bright brown.

SUBSTANCE, cartilaginous, flexible while moist, but brittle after it has been dried.

OBS. In drying, it does not at all adhere to paper.

This *Fucus* is nearly allied to *F. subfuscus* and *F. floccosus*, and in its mode of growth especially approaches the latter, but differs very obviously, as well as very satisfactorily, from both in bearing its fructification in a hard globule, which does not at all contract in drying, but is in that state still more striking than when moist. The shape of this capsule, and its oblong not pyriform seeds, render it most probable that *F. pilulifer* belongs to a different family of Algæ from the two plants just mentioned, though its habit and color lead to the opposite opinion. Its spine-like ramuli give it at first sight an appearance far from unlike that of *F. aculeatus*.

a. <i>Fucus pilulifer</i> , natural size.							
b. branch, magnified	-	-	-	-	-	-	6.
c. capsule	-	-	-	-	-	-	5.
d. seeds	-	-	-	-	-	-	2.
e. the same	-	-	-	-	-	-	1.



Fucus pilulifer.

Fucus, fronde cartilagineâ, compressâ, ramosâ; ramis alternis, distichis, ultimis setaceis spiniformibusque: capsulis sphaericis, in ramulis juxta apices sessilibus.

HABITAT in freto, *Nootka Sound* dicto. *D. Menzies*.

Perennis?

RADIX nondùm a me visa.

FRONS semipedalis et ultrâ, (forsan multo longior, basin enim nunquam vidi, neque pro certo affirmare possum an exemplar hîc depictum sit planta integra an tantùm ramus) in parte infimâ et luic proximâ teres, pennæque Merulæ ferè crassitie, inde compressa, atque apices versus omninò plana, ubique tamen filiformis, ramosissima; *rami* alterni, distichi, patentes, tripollicares et ultrâ, attamen longitudinis perquàm incertæ, longis brevibusque immixtis, omnes pinnati aliis, minoribus, remotiusculis, simili ratione dispositis, et hî quoque tertiam seriem, seu *ramulos* ferentes, qui tenuissimi sunt, vix lineam longi, aculeiformesque:—frondis pars inferior ramorum diffractorum reliquiis rudis.

FRUCTIFICATIO *tubercula* sphaerica, atra, papaveris seminibus majora, ramulis juxta apices insidentia, plerumque solitaria, sed interdùm bina, seminum enormitèr oblongorum dilutè purpurascentium congeriem in muco pellucido inclusam foventia.

COLOR in iis quæ ego vidi exemplaribus fusco-nigricans, et tantùm apices versus paullùm dilutior; *in recente* lætè subfuscum crederem.

SUBSTANTIA cartilaginea, flexilis; *exsiccata* fragilis.

Obs. Per desiccationem non adhæret chartæ.

Nulli ferè sunt inter *Fucos* jam in hoc opere descriptos vel postea describendos quibus propiùs accedit *F. pilulifer* quàm *F. subfusco* et *F. floccoso*, huic quidèm ob crescendi modum maximè affinis. Ab utroque autem horum satis manifestè per fructificationem longè diversam distinguitur; non enim fert fructum, illorum instar, in siliquis lanceolatis inclusum, sed contrà in sphaerulâ quæ tactu dura est, et quæ desiccata nequaquàm contrahitur figuramve ullo modo mutat. Hinc quoque fit ut planta, in hoc et simùl in formâ seminum ipsorum oblongâ, evidentèr discrepet ab alterâ illâ quam vocamus *F. subfusci* fructificatione nupèr detectâ, e capsulis constante elliptico-urceolatis semina pyriformia acuminata foventibus. Suadet insupèr hæc eadem capsularum seminumque figura, repugnantibus tamen ut verum fatear plantarum habitu coloreque, *F. piluliferum* esse mox alii associandum *Fucorum* familiæ nec includendum in illâ quæ *F. subfuscum* unâ cum *F. floccoso* jactat. Ramuli spiniformes stirpi dant faciem quæ quodammodo ad *F. aculeatus* accedit.

a. <i>F. pilulifer</i> , magn. nat.							
b. <i>ramus</i> , magn. auct.	-	-	-	-	-	-	6.
c. <i>capsula</i>	-	-	-	-	-	-	5.
d. <i>semina</i>	-	-	-	-	-	-	2.
e. <i>eadem</i>	-	-	-	-	-	-	1.

Fucus Lambertii, frond cartilaginous, flat, nerveless, much and irregularly branched; branches distichous, subdichotomous, beset on both sides with short toothed ramuli; their apices multifid in a palmate manner, obtuse, and bearing sessile, spherical capsules.

On the Coast of New Holland. *Governor King*.

Perennial?

ROOT, an orbicular callous base, two or three lines in diameter, thin, and of the same color as the frond.

FRONDS, numerous from the same base, half a foot or more long, flat, destitute of midrib or veins, immediately at their origin very narrow and compressed, but acquiring the width of a line and half or two lines before they are half an inch high, and then becoming quite flat: they usually rise to the height of an inch or an inch and half undivided and linear, after which they are forked with patent segments of nearly equal height somewhat more narrow, some of which continue to the end undivided and nearly linear, while others are repeatedly dichotomous without any regularity at uncertain intervals, each division being a little narrower than those below it; the whole of them are from top to bottom pinnated with patent, distichous, alternate *ramuli* slightly curved inwards, some of them, and, indeed, the greater part, not two lines long and linear with pointed tips; others twice or thrice that length and pinnated or rather dentate with a series of excessively minute spine-like teeth; while others again are elongated into new branches of various length, in every respect like the primary ones: this mixture of long and short shoots gives the whole frond a very irregular appearance: the apices are multifid and palmate, with very short segments, of which the barren ones are acute, those with fruit, obtuse.

FRUCTIFICATION, small, spherical *capsules*, sessile upon the very tips of the frond, which they resemble in color, only one on each: these in my specimens were all too young for me to offer any observations upon their internal structure or the seeds.

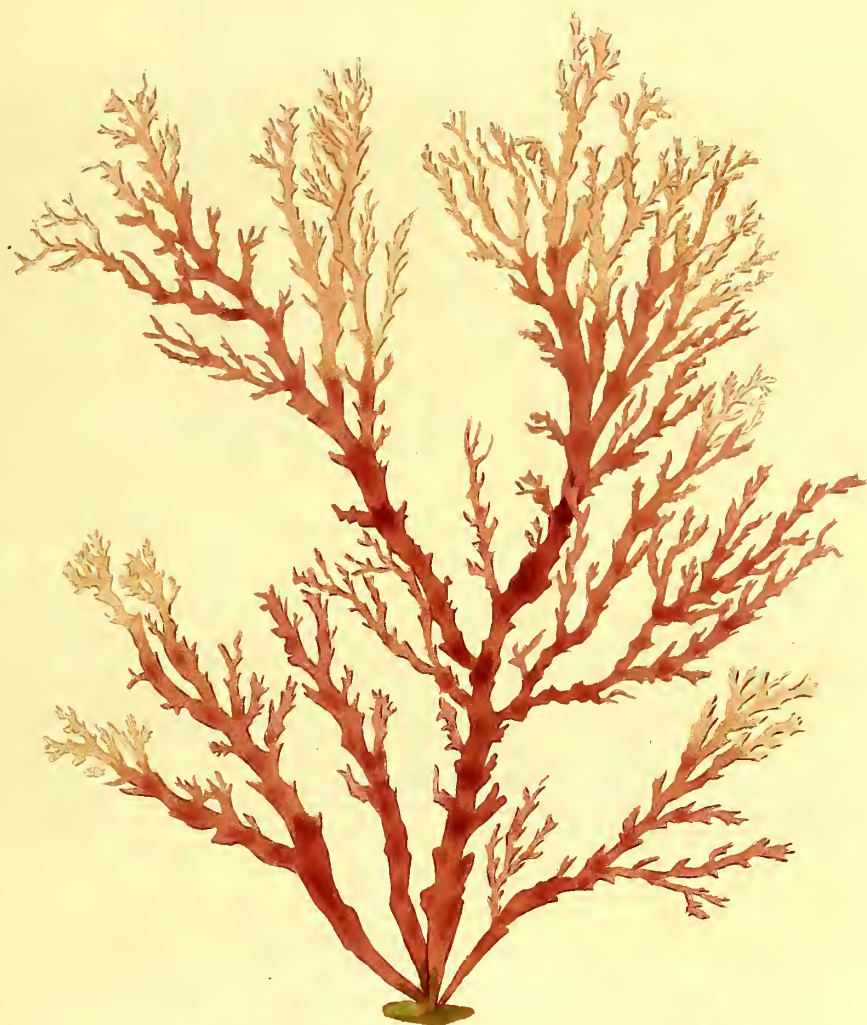
COLOR, a beautiful, rich, deep pink, paler towards the ends of the branches, and fading to a dirty yellowish white from too long exposure to the sun.

SUBSTANCE, cartilaginous, flexible, tough.

Obs. In drying, it neither adheres to paper, nor changes in any degree its form or color.

This *Fucus*, for which I am indebted to Mr. Lambert, appears to me sufficiently distinct, as well from all those which my friend, Mr. Browne, brought with him from the same shores, as from any others that had been previously described by naturalists. In its habit, its mode of growth, and its texture, it obviously approaches *F. crinitus*, *F. cervicornis* and *F. coronopifolius*, with the two latter of which it also agrees in color, nor do I know any other *Fuci* to which it is by any means so nearly allied: it might even at first sight be overlooked as a variety of one of them; but an attentive observation will readily enable us to detect satisfactory differences, particularly in the form of the ramuli and of the palmated obtuse apices of the shoots; while the widely dissimilar fructification fortunately also comes to our aid to remove any difficulties upon the subject. I have had much pleasure in calling this beautiful species by the name of one of those Naturalists, of whom, for his splendid publication on the Genus *Pinus*, as well as for his unremitting exertions in the cause of science, British Botany has the greatest reason to be proud.

- | | | | | | |
|---|---|---|---|---|----|
| a. <i>Fucus Lambertii</i> , natural size. | | | | | |
| b. <i>small branch</i> , magnified | - | - | - | - | 6. |
| c. <i>end of a branch in fruit</i> | - | - | - | - | 4. |
| d. <i>capsules</i> | - | - | - | - | 2. |



Fucus Lambertii.

Fucus, fronde cartilagineâ, planâ, enervi, ramosissimâ; ramis distichis, subdichotomis, utrinque obsitis ramulis abbreviatis, serrato-dentatis; apicibus multifido-palmatis, obtusis, capsulas sphæricas sessiles gerentibus.

HABITAT in Novæ Hollandiæ oris. *D. King.*

Perennis?

RADIX callus orbicularis, diametro duarum triumve linearum, tenuis, frondi concolor.

FRONDES ex eâdem basi plurimæ, semipedem et ultra longæ, planæ, nervi venarumque expertes, ipso ortu perangustæ compressæque, sed priusquàm ad unguis altitudinem attingunt in sesquilineæ vel duarum linearum latitudinem dilatata planæque factæ, exinde plerumque ad pollicem aut sesquipollicem indivisæ et lineares, quum bifurcæ fiunt, segmentis aliquantùm angustioribus, patentibus, subfastigiatis, his indivisis et propemodùm linearibus, illis vagè iterùm atque iterùm dichotomis, intervallo inter dichotomias incerto, utroque segmento subjacentibus paullùm angustiore, omnibus per totam longitudinem pinnatis ramulis distichis, patentibus, alternis, lenitè incurvis, lineæ sesquilineæve intervallo sejunctis, nunc, quales sunt plurimi, haud duas lineas longis, lineari-acuminatis, simplicibus et tantùm dorso serratis, nunc duplo triplove longioribus, et ipsis serie minutissimorum spiniformium dentato-pinnatis, nunc in novos ramos primariorum similes longitudine perquàm varios elongatis, his illis ubique immixtis, ut tota frons absque normâ divisa videatur: apices multifido-palmati, segmentis brevissimis, sterilibus acutis, fructiferis obtusis.

FRUCTIFICATIO capsulæ exiguæ, sphæricæ, ipsis frondis apicibus insidentes, iisque concolores, una in singulis: de harum fabricâ internâ et de seminibus nihil est quod dicam, ætate capsularum haud satis propectâ prohibente.

COLOR pulcherrimè saturatè roseus, apices versus pallidior, soli diu objectæ in sordidè lutescentem evanidus.

SUBSTANTIA cartilaginea, lenta, tenax.

OBS. Per desiccationem neque adhæret chartæ, nec faciem coloremve ullo modo mutat.

Collatis, quantum in me est, omnibus Fucis, quos secum ex Australasiæ oris attulit *D. Browne*, nec his modò, sed et iis qui priùs per Botanicorum labores in aliis orbis nostri partibus innotuerant, invenio nullum a quo non satis distincta videtur species in hâc tabulâ depicta. Hæc texturâ suâ, crescendi modo, habituque, quod aiunt, generali, manifestè ad *F. crinitum*, *F. cervicornem* et *F. coronopifolium* accedit, his longè magis quàm aliis quibuslibet affinis, et colore insupèr gaudens eodem quo horum alter tertiusque. Hinc etiam fieri potest ut primo aspectu quivis obiter modò intuens pro alterutrius varietate prætermissam transire possit: certissimè autem inter se discrepant; ramulorum enim figura nequaquàm est omnibus eadem, et palmati obtusique frondis apices non sunt nisi in *F. Lambertii* conspiciendi. Quod scrupulos quoque omnes aufert, fructificatione dissimili distinguuntur. Magnâ cum voluptate occasionem arripio insigniendi hunc Fucum nomine viri clarissimi, *A. B. Lambertii*, Armigeri, cui pulcherrimam debemus generis *Pinus* Monographiam, et qui studio indefesso, sumptibus nihil parcens, nunquam non optimè de re Botanicâ meruit.

a. <i>Fucus Lambertii</i> , magn. nat.					
b. ramus e minoribus, magn. auct.	-	-	-	-	6.
c. rami fructiferi apex	-	-	-	-	4.
d. capsulæ	-	-	-	-	2.

Fucus lucidus, frond between membranaceous and cartilaginous, flat, linear, with a faint, obscure midrib, irregularly branched; branches bipinnate; pinnæ alternate, decurrent, truncated: receptacles marginal, sessile, oblongo-urceolate.

On the Southern Coast of New Holland. *Mr. Brown.*

Perennial.

ROOT, an expanded callous disk.

FROND, about nine inches long, flat, linear, and, as far as can be seen by the naked eye, destitute of veins or midrib, yet always thickened towards the center, repeatedly pinnated, the primary branches, however, irregular in situation as well as in length, and often again divided in the same uncertain manner, but all the segments beautifully beset with patent, alternate, decurrent pinnæ, of the same substance as themselves, separated by short intervals, and again twice or thrice pinnated, each series being narrower and shorter than the preceding, so that the extreme ones scarcely equal a line in length, or half a line in width: in barren shoots, the apices are obtuse, as if truncated; the margins are entire, except indeed accident should have caused them to be torn or toothed, a circumstance which, owing to the tenderness of their substance, often occurs: towards the root, and occasionally in the lower part of the primary branches, the true midribbed structure of the frond is made evident; for here the membrane is commonly in great measure or wholly destroyed, and nothing remains, but the more thick midrib, which more or less, in different specimens, resembles a narrow compressed stem: from this, by a proliferous mode of growth, arise new branches, usually standing horizontally, but most uncertain in length, situation, and number.

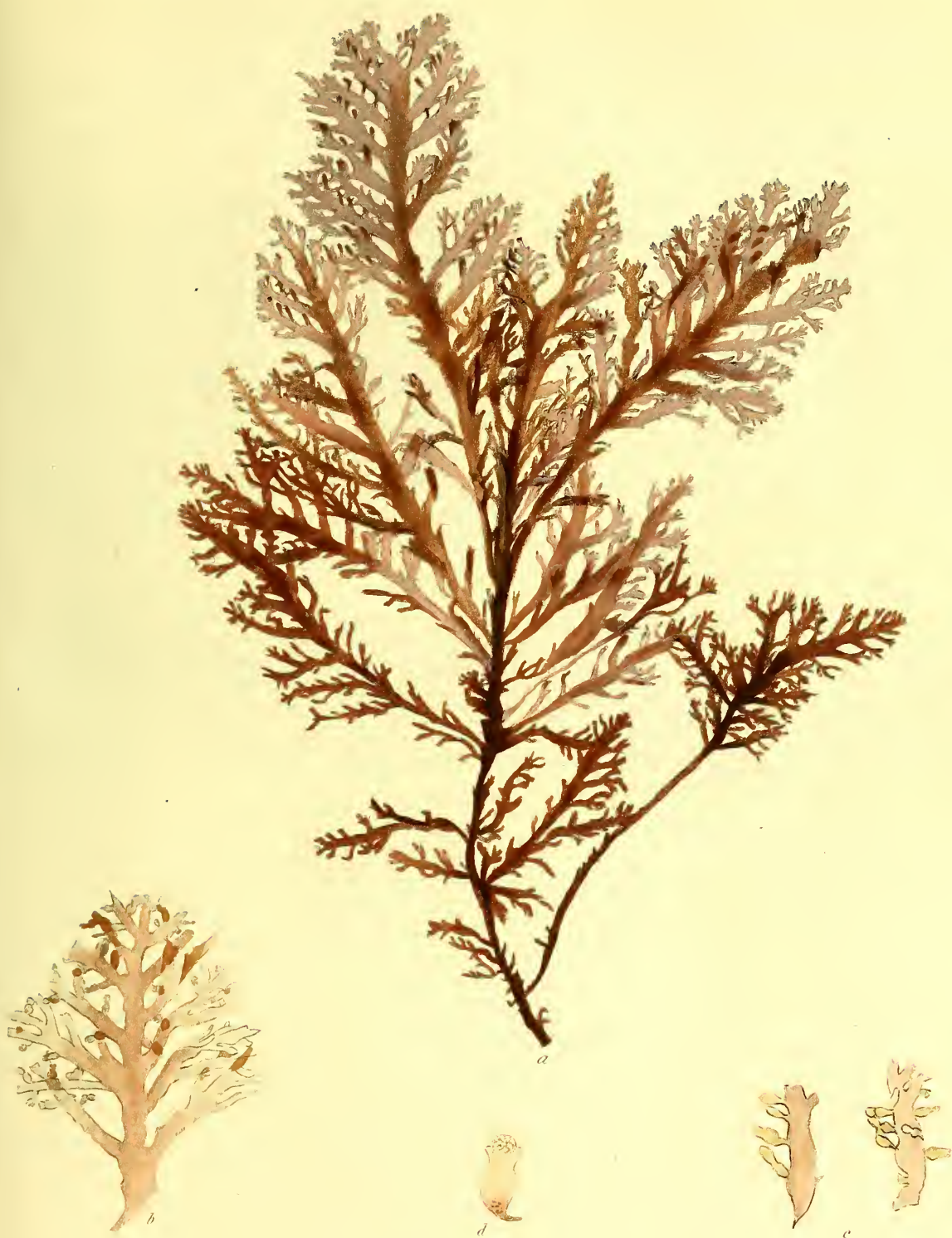
FRUCTIFICATION, small, oblong, obtuse, compressed *receptacles*, sometimes solitary, and sometimes two or three connected like the beads of a necklace, placed in a horizontal direction upon the margins of the upper branches, of a darker color than the rest of the frond, and including several very minute, brown seeds, which, instead of being collected into a mass, lie scattered all over the capsules, so that they might almost be supposed to be separated from each other by partitions, and thus they give the receptacles under the microscope a dotted appearance.

COLOR, a beautiful red, approaching that of tiles, darker in a dried state, and then covered with a gloss, as if varnished.

SUBSTANCE, cartilaginous, and rather thick towards the base, in the branches approaching to membranaceous, every where flexible and tough.

The glossy surface of this *Fucus*, which may not unaptly be compared to that of *Boletus lucidus*, induced Mr. Brown, the only Botanist, I believe, who has yet gathered it, to bestow upon it the same specific name. It is a beautiful, and at the same time a very distinct species, to none so much allied as to the subject of the preceding plate, but sufficiently distinguished from it by its differently shaped fructification, and pinnated mode of growth. The same circumstances, added to its nearly membranaceous substance, and the evident tendency to a midrib, will equally serve to distinguish *F. lucidus*, at first sight, from *F. cartilagineus*, *F. crinitus*, and others of the same family.

a. <i>F. lucidus</i> , natural size.						
b. branch of a specimen in fruit, magnified	-	-	-	-	-	6.
c. ramuli, with capsules	-	-	-	-	-	4.
d. capsule	-	-	-	-	-	3.



Fucus lucidus.

Fucus, fronde cartilagineo-membranaceâ, planâ, lineari, sub-enervi, vagè ramosâ; ramis bipinnatis; pinnis alternis, decurrentibus, truncatis: receptaculis marginalibus, sessilibus, oblongo-urceolatis.

HABITAT in Australibus Novæ Hollandiæ oris. *D. Brown.*

Perennis.

RADIX callus discoideus, explanatus.

FRONS dodrantalis, plana, linearis, nervi venarumque, quantum ad oculum inermem apparet, experts, medio tamen semper incrassata, supra-decomposito-pinnata, ramis primariis absque normâ sitis, et longitudine pariter incertis, his quoque plerumque iterum vagè divisis, segmentis omnibus pulchrè decomposito-pinnatis, pinnis patentibus, homogeneis, alternis, decurrentibus, singulis brevi intervallo disjunctis, utrâque serie præcedentibus angustiore et brevior, ut ultima vix lineam longitudine, vix semilineam latitudine æquent; sterilius apices obtusi, quasi truncati; margines integerrimi, nisi, quod ob substantiam teneram sæpius evenit, casu vagè lacerati dentatique occurrant: radicem versus, et nonnunquam in ramorum primariorum parte inferiore, vera frondis indoles costata detegitur; hinc enim membrana vel penitus vel magnâ saltem ex parte deperdita evanuit, manetque tantummodò crassior costa, quæ stipitem compressum angustum plus minus refert: novi ex hac rami, cæterorum similes, sæpe prolifero crescendi modo oriuntur, horizontales ut plurimum, sed quoad longitudinem situm numerumve nullo certo ordine servato.

FRUCTIFICATIO receptacula exigua, oblonga, obtusa, compressa, nunc solitaria, nunc duo vel tria concatenatim connexa, ramorum summorum marginibus horizontalitèr imposita, intensioris quàm qui reliquæ frondi coloris, et includentia semina plurima, minutissima, fusca, non in congeriem coacervata, sed per totam sparsa substantiam, ut quasi claustris disjuncta videantur: hinc capsulæ per lentem visæ punctatæ apparent.

COLOR pulchrè lateritius; exsiccatae intensior, superficiesque per desiccationem nitet velut vernice obducta.

SUBSTANTIA basin versus cartilaginea et crassiuscula, in ramis cartilagineo-membranacea, ubique lenta et tenax.

Superficies hujus Fuci colore atque nitore haud malè illam *Boleti lucidi* refert. Hinc ductus est *D. Brown* ut idem quoque stirpi submarinæ quod olim *Curtisius Fungo* nomen inderet. Unus hic, quod scio, inter Botanicos hactenus legit *F. lucidum*, plantam perpulchram et quæ simul absque molestiâ a reliquis dignoscitur. Tantâ cum nullo Fuco affinitate devincitur quantâ cum *Fuco Lambertii*, in tabulâ præcedente delineato; sed ab hoc facilè primo statim aspectu dignoscitur, cum per capsulas alienâ donatas formâ, tum per crescendi modum pinnatum. Eadem hæc efficiunt ut neque cum *F. cartilagineo* aut *F. crinito*, neque cum alio quopiam ejusdem familiæ individuo sit commiscendus; distinguitque insuper substantia membranacea, non verè forsitan costata dicenda, sed quæ costæ indicia ubique prodit.

a. <i>F. lucidus</i> , magn. nat.						
b. frondis fructiferæ ramus, magn. auct.	-	-	-	-	-	6.
c. ramuli	-	-	-	-	-	4.
d. capsula	-	-	-	-	-	3.

Fucus alveatus, frond between cartilaginous and gelatinous, linear, dichotomous, grooved on one side from top to bottom; upper branches clustered; apices incurved, acute: tubercles spherical, sessile.

On the coast of New Zealand. *Sir Joseph Banks, Bart.*

Annual?

ROOT, a very small, callous disk.

FRONDS, numerous from the same base, three or four inches long, linear, scarcely one line wide, flat, but with the margin everywhere from top to bottom remarkably involuted, so that on one side they are strongly and clearly channelled: to the height of two or three inches they rise undivided, after which they become forked, and then are repeatedly dichotomous, the angles of the divisions being patent, and the lowest divisions separated from each other by the interval of half an inch, after which the distance between each gradually diminishes as they approach the summit; so that the apices are crowded, and the frond wears in this part a bushy appearance: the margins are always quite entire; the tips acute and slightly curled.

FRUCTIFICATION, spherical tubercles, smaller than poppy-seed, scattered in great profusion without any order over the margin of the upper branches, sessile, of the same color and substance as the frond, each containing a globular mass not more than a third or a fourth of its own size, which wholly consists of pink, angular seeds, so small as not to be visible without a microscope.

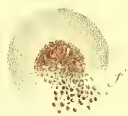
COLOR, very pale dull brown, semi-transparent, tinged in places with a livid purplish hue, and becoming considerably darker from drying.

SUBSTANCE, between cartilaginous and gelatinous, extremely tender.

Obs. The whole plant, in drying, becomes horny, and entirely changes the appearance it had when fresh; but may at all times be distinguished by the incurved margins of the frond: if kept long in fresh water, it melts into a jelly.

Of this, as of the preceding *Fucus*, may be said, that it is not only a very distinct but a very beautiful species, though, unfortunately, one of which an adequate idea can scarcely be conveyed by an engraving. The channelled structure of the frond is not, as in *F. mamillosus* and some others, a mere central depression, more or less conspicuous in different parts, imperfect in some specimens, indistinct in others, in all liable to variation; but it is the great and essential character of the plant, obvious at first view, in all parts equally present, and still more decisively marked than in *F. canaliculatus* or *F. Wrightii*, whose grooved structure arises from a similar conformation. It is to the latter of these *Fuci* that *F. alveatus* should perhaps be placed nearest in a systematical arrangement: they belong to the same family, and have many peculiarities in common; but the plant here figured is in a natural point of view still more closely allied to *F. stiriatus*, whose substance, as well in the frond as in the fruit, is precisely the same. They both also equally resolve into a gelatine from being kept in fresh water; nor should I doubt but that, could they be found in sufficient quantity, they would make a desirable addition to our culinary ménage; more so, certainly, than any *Fucus* yet known to be thus employed, and probably more so than any other yet discovered.

a. <i>F. alveatus</i> , natural size.					
b. upper part of the frond, magnified	-	-	-	-	6.
c. part of the frond	-	-	-	-	5.
d. summit of the same	-	-	-	-	5.
e. section of a capsule	-	-	-	-	4.
f. the same	-	-	-	-	2.
g. seeds	-	-	-	-	1.



Fucus alveolatus.



Fucus, fronde cartilagineo-gelatinosâ, lineari, dichotomâ, hinc longitudinalitèr canaliculatâ; ramis summis congestis; apicibus incurvis, acutis: tuberculis sphæricis, sessilibus.

HABITAT in Novæ Selandiæ oris. *D. J. Banks, Baronettus.*

Annua?

RADIX callus perpusillus.

FRONDES ex eâdem basi plurimæ, tri-quadri-pollicares, lineares, vix unam lineam latæ, planæ, sed marginibus ubique a basi usque ad apices insignitèr involutis, ut hinc canaliculata evadat: ad duorum et ultra pollicum altitudinem indivisæ assurgunt, mox repetito-dichotomæ, dichotomiarum angulis patentibus, furcis primis semipollicis ferè intervallo distinctis, reliquis quo magis ad frondis apices appropinquant eo brevioribus, ut rami summi conferti et tota frons hinc sit cæspitosa: margines semper integerrimi; apices acuti, lenitèr involuti.

FRUCTIFICATIO *tubercula* sphærica, Papaveris granis minora, copiosissimè in ramis superioribus ad margines absque normâ sparsa, sessilia, frondi concolora et homogenea, singula includentia globulum purpureum ipsis triplo quadruplove minorem, qui totus e seminibus angulatis, pallidè rubris non nisi per lentem propter parvitatem detegendis constat.

COLOR aquosè fuscus, subdiaphanus; hinc illuc purpurascens-livido perfusus; *exsiccata* longè intensior.

SUBSTANTIA cartilagineo-gelatinosa, tenerrima.

OBS. Tota stirps per desiccationem fit cornea, faciemque induit recentis valdè dissimilem; marginibus tamen involutis nunquam non dignoscitur: in aquâ dulci servata citò in gelatinam solvitur.

Apices densè fasciculati prohibent quominus *Fuci alveati* nativa pulchritudo in icone conspiciatur; sed est reverà pulcher et est certissimè, si quis alius, specie a reliquis distinctus. Frons canaliculata characterem indubium præbet, characterem quoque cuivis satis obvium, et qui, cùm nunquam non adest, tùm est in omnibus paritèr frondis videndus partibus. Neque oritur hæc conformatio in *F. alveato*, sicut in *F. mamilloso* aliisque quibusdam, tantùm a latæ frondis centro depresso, marginibus hinc magis illic minùs elevatis, et semper absque normâ; sed frondis scaphæformis margines incurvati efficiunt ut horizontalitèr dissecta semicirculum ostendat; quod vel magis est hinc conspicuum quàm in *F. canaliculato* aut in *F. Wrightii*, quorum utrorumque structura alveata e fronde simili modo conformatâ pendet. In *Fucis* secundum systematis formam disponendis, *F. alveatus* locum sibi vindicat *Fuco Wrightii* proximum: ad eandem familiam pertinent habentque multa inter se communia. Sin natura in disponendis respiciatur, *F. stiriatus* habemus cui longè magis est hic noster affinis; et cui, cùm in fronde, tùm in fructu, indoles prorsùs eadem. Paritèr etiam ambo, si diu in aquâ dulci retineas, in gelatinam solvuntur; quamobrem nullus dubito, quin uterque culinæ gratissimus accederet, dummodò satis copiosè legi possent. Cibo enim, uti satis est notum, inserviunt plurimæ *Fucorum* species, inter quas præstantissimæ semper quæ maximè gelatinosæ, et in hoc *F. alveatus* et *F. stiriatus* eminent.

a. <i>F. alveatus</i> , magn. nat.						
b. <i>frondis pars superior</i> , magn. auct.	-	-	-	-	-	6.
c. <i>frondis alia pars</i>	-	-	-	-	-	5.
d. <i>frondis apex</i>	-	-	-	-	-	5.
e. <i>capsula dissecta</i>	-	-	-	-	-	4.
f. <i>eadem</i>	-	-	-	-	-	2.
g. <i>semina</i>	-	-	-	-	-	1.

Fucus gladius, frond coriaceous, compressed, linear, nerveless, dichotomous; segments between erect and patent; the upper ones in young shoots erect, short, and obtuse; in older ones elongated, acuminate, and incurved.

Fucus Gladius. LABILL. *Pl. Nov. Holl.* II. p. 111. t. 256. *Enc. Méth. Bot. Suppl.* V. p. 439. LAMOUROUX, in *Mém. du Mus. d'Hist. Nat.* XX. p. 36.

On the Shores of Van Diemen's Land. *La Billardiére*.

Perennial.

ROOT, an expanded, black, callous disk.

FRONDS, growing in tufts, a foot or more long, between compressed and flat, preserving from base to summit an everywhere equal width of about a line and half, usually forked immediately near the root, and afterwards eight times, or even more frequently, dichotomous; the distance between each division is most uncertain; the direction of the segments between erect and patent; the angles of the dichotomies slightly rounded; the margins everywhere quite entire; the whole frond destitute of veins or midrib; the apices, which appears extraordinary, in young shoots erect, short, and so obtuse, as to seem almost truncated, but in those that are full grown two inches or more long, bent like a scymitar, and attenuated so much as to be acuminate.

FRUCTIFICATION, unknown.

COLOR, deep chesnut-brown; black, when dry.

SUBSTANCE, coriaceous, thick, tough.

Obs. The summits of the young shoots are always found black, so as almost to look as if singed: it does not at all adhere to paper.

M. La Billardiére, in his description of *F. gladius*, speaks of the fructification as immersed in the substance of the frond, and figures, though imperfectly, some oblong wart-like tumors, which he supposes to be its capsules; but these are so altogether unlike what we might naturally expect in such a plant, and are so similar to what may occasionally be seen, originating from accident, upon various parts of other Fuci, that I have ventured in this particular upon differing from a real observer, and trusting for once to analogy; though with a painful conviction that in marine plants, she is, perhaps, less than in any other branch of natural history, to be implicitly followed as a guide. It is impossible not to dissent equally from another opinion of the Author just mentioned, in which he notices the resemblance between *F. gladius* and *F. lumbricalis*: they agree indeed in their dichotomous mode of growth; but they differ in every other particular: on the contrary, the nearest affinity of *F. gladius* is with *F. axillaris* of this work, a plant from the same seas, and which, before I had seen the other, I had even supposed might ultimately prove not to be specifically distinct. Now, however, that through the kindness of Professor Mertens, I have had an opportunity of examining authentic specimens of the Fucus here figured, I have no longer any doubts remaining upon the subject. *F. axillaris* is a plant whose stem is of a different substance and form from its branches, and whose mode of growth everywhere approaches to pinnate. *F. gladius*, on the other hand, is regularly dichotomous, as well in its earliest as in its latest stage, and is linear, and of the same substance throughout. That a fructification somewhat similar will be found in both, or at least such an one as may throw both these plants into the same natural family with *F. dorycarpus*, I feel it impossible to doubt. M. Lamouroux indeed arranges *F. gladius* not only among what he regards as true Fuci, but also in the first division, "*Vesiculis aëriiferis stipitatis; foliis distinctis, sessilibus aut petiolatis*;" but with no one of these characters does it accord. In the young plants of this species, the angles of the dichotomies are considerably like those of *F. tuberculatus*, and there is in general appearance a resemblance that would scarcely be expected.

a. *F. gladius*, natural size.

b. young shoot.



Fucus gladiatus.

Fucus, fronde coriaceâ, compressâ, lineari, enervi, dichotomâ; segmentis erecto-patentibus; juniorum apicibus abbreviatis, erectis, obtusis; adultiorum elongatis, acuminatis, curvatis.

Fucus gladius. LABILL. *Pl. Nov. Holl.* II. p. 111. t. 256. *Enc. Méth. Suppl. Bot.* V. p. 439. LAMOUROUX, in *Mém. du Mus. d'Hist. Nat.* XX. p. 36.

HABITAT ad Capitis Van Diemen littora. *La Billardière*.

Perennis.

RADIX callus dilatatus, nigricans.

FRONDES cæspitosæ, pedales et ultrâ, compresso-planæ, latitudinem circitèr sesquilineæ ubique æqualem a basi ad apicem servantes, ipsam juxta radicem plerumque furcatæ, et mox dichotomiis octies et sæpiùs repetitis, intervallo inter singulas nequaquàm certo, ramosissimæ; dichotomiarum anguli erecto-patentes, lenitèr rotundati; margines ubique integerrimi; costæ venarumve vestigium nullum; apices, quod vix naturæ consentire videtur, in junioribus erecti, breves, obtusi, ut propemodùm truncatos diceret, in adultis duos et ultrâ pollices longi, acinacis in formam incurvi, et attenuati ut in acumen producantur.

FRUCTIFICATIO ignota.

COLOR intensè badius; *exsiccatæ* niger.

SUBSTANTIA coriacea, crassa, tenax.

Obs. Ramorum juniorum apices semper nigricantes reperiuntur, ut ustos ferè crederet aliquis.

Si descriptio *F. gladiati* Labillardieriana respiciatur, stupebit fortè aliquis hanc nostram legens, quòd, cùm ille fructiferum descripserit depinxeritque, nos contrâ nullam fructificationem hucusque detectam dixerimus. Hoc autem nequaquàm incuriâ aut inconsultè evenit; neque ignoro quantum debetur viro accuratissimo eidemque semper descriptiones ad ipsas plantas conficienti. Sed multa in *Fucus* præter spem cadunt; errorique ausam facilè præbuerunt tubercula, laud ad fructum, ut mihi videtur, pertinentia, sed quorum situs atque natura arguunt indolem similem verucarum in quibusdam *Fucus* Europæis obviarum ortumque verosimilitèr ducentium ab insecti cujusdam marini punctu. Nec minùs cogor discedere ab illâ Labillardieri sententiâ, quâ *F. gladium* *F. lumbricali* affinem judicat. Dempto enim dichotomo crescendi modo, nulla omninò inter utrosque similitudo interest. *F. gladius* autem verè cognatus est *F. axillari*, plantæ eorundem marium incolæ, et quæ *F. lumbricali* prorsùs est absimilis. De his, anteaquàm per Mertensii benevolentiam *Fucus* hîc depictum viderim, dubitaveram ut specie reverà essent distincti. Sed differre satis liquet: caule enim præditus est *F. axillaris*, qui, cùm formâ, tùm substantiâ, a ramis discrepat; hique pinnato more disponuntur; quæ contra, ubique et in omni ætatis stadio dichotomus est *F. gladius*, neque ramorum substantiâ aut figurâ mutationibus est obnoxia. Sed, ut ad fructificationem redeam, cùm tanta sit hisce duabus stirpibus affinitas, persuasum mihi habeo talia demùm in *F. gladiato* receptacula fore detegenda qualia eidem cum *F. axillari* familiæ associant: adjungendus quoque erit *F. dorycarpus*, naturâ etiam affinis. In hoc analogiam modò, ut fateor, sequor, quæ tamen quàm cæcus sæpe sit, in plantarum marinarum cognitione, dux, expertus scio. Lamourouxius *F. gladium* *Fucus* suis veris, ut ita dicam, ascripsit, primæque horum inseruit sectioni, dignoscendæ "*Vesiculis aëriiferis stipitatis, foliis distinctis, sessilibus aut petiolatis*;" sed ubi aut vesiculas aut folia invenerit planè nescio. In surculis hujusce stirpis junioribus dichotomiarum anguli rotundati multùm referunt eas *F. tuberculati*, et in totâ stirpe inest simile quiddam vix in plantis longè dissitis expectandum.

a. *F. gladius*, magn. nat.

b. *surculi juniores*.

Fucus saccatus, root fibrous, branched; frond membranaceous, oblong, tubular, perforated all over with exceedingly minute pores, and supported on a very short filiform stipes.

Fucus saccatus. LEPECHIN, in *Nov. Comm. Act. Petropol XIX. Hist.* p. 56. *Mem.* p. 476.

Delesseria saccata. LAMOUROUX, in *Mém. du Mus. d'Hist. Nat. XX.* p. 125.

At Nootka Sound. Mr. Menzies. Among the rejectamenta of the sea on the coast of Kamtschatka. Dr. Tilesius.

Annual?

ROOT, consisting of numerous, very short, thickish fibres, of the same color and substance as the frond, and either simple or irregularly once or twice divided.

FRONDS, numerous from the same base, two or three inches long and perfectly simple, composed only of a tubular purse-like membrane, thicker than the fore-finger, either oblong or ovate, attenuated at its base into a slender cylindrical stipes not more than a line long, nor exceeding the diameter of a crow's quill. In a recent state the plant is found full of sea-water: the surface, observed under a powerful magnifier, appears all over dotted with very minute punctures.

FRUCTIFICATION, not yet discovered.

COLOR, in the plant, when fresh, deep red, with a tinge of olive-green; but soon changing into a dirty yellowish green, or even fading to white.

SUBSTANCE, membranaceous.

The specimens of this *Fucus* communicated by Mr. Menzies and Dr. Tilesius differ materially from each other, and may possibly hereafter prove to be specifically distinct. I have, therefore, considered it best to figure both; in doing which, I have fortunately been able to avail myself of a drawing of the Kamtschadale plant made from recent specimens and communicated by Professor Mertens. The description above given is entirely taken from the other, whose substance is thin, and frond attenuated at its base into a distinct stem. In these respects Dr. Tilesius' plant* differs, its texture being so tough as to approach to coriaceous, and its tubular frond apparently quite sessile. A third *Fucus*, which seems in a great measure allied to both these, has been sent me by Mr. Brown from New Holland. Its interior is filled with gelatine, its membranous coat partakes of the same gelatinous texture, and its shape is remarkably pyriform, so as when pressed to resemble that of *F. Radula*. But from its appearance I suspect it to belong to the Genus *Asperococcus*, of Lamouroux; and perhaps it may be the very same plant as his *A. bullosus*. The reference made above to Lepechin's plant in the Petersburg Transactions rests wholly upon the authority of Professor Mertens, as I have never had an opportunity of consulting that work. M. Lamouroux, in his new arrangement of the Thalassio-phytes, has referred *F. saccatus* to his *Delesseria*, and placed it near *F. edulis* and *F. palmatus*, which certainly may be its natural affinities, though it is difficult to speak with any certainty of the affinities of a plant so anomalous. But this genus of his also includes *F. sanguineus*, *F. rubens*, and some others, which have no connexion with these or with each other. He has named the family after Baron Delessert of Paris, one of those ardent cultivators and liberal patrons of science who do honor to their age and their country.

- a. a. *F. saccatus*, from Nootka, natural size.
- b. lower part of the frond, magnified - - - 6.
- c. portion of the frond - - - - 1.
- d. d. *F. saccatus* from Kamtschatka, natural size.

The description of this *Fucus* while fresh, as written by Dr. Tilesius himself, I am happy to have the opportunity of here transcribing; some of the particulars being such as I never had any opportunity of observing.—“*Fucus marsupiformis*, subcoriaceo-membranaceus, caule lineari, brevissimo, vel nullo, ex meris bursis saccatis, rufis, vel coccineis, aut niveis compositus, interdum et majoribus membranaceis, viridibus, fundo amplissimo, basi attenuatis, pedunculis brevissimis filiformibus inter se cohærens, et aliis corporibus, Mytilis esculentis, ac lapidibus agglutinatus. Quosdam saccos arenâ nigrâ repletos dissecui; plerumque verò *F. saccati* integri bursæ ab undis nuper ejecti aquæ marinæ plenæ turgent, et donec comprimuntur ex fundo marsupiformi denis et pluribus fonticulis capillaribus aquam, syphonis hortulanorum ad instar, ejiciunt. Fundus sacci poris subtilissimis pertusus est, qui verosimiliter a fructificationibus, quarum quædam rarissime nodulis sparsis occurrunt, remansere.”



Fucus sacculus.

Fucus, radice fibrosâ, ramosâ; fronde membranaceâ, oblongâ, tubulosâ, breviter stipitatâ, poris minutissimis pertusâ.

Fucus saccatus. LEPECHIN, in *Nov. Comm. Act. Petropol. XIX. Hist.* p. 56. *Mem.* p. 476.

Delesseria saccata. LAMOUROUX, in *Mém. du Mus. d'Hist. Nat. XX.* p. 125.

HABITAT in Sinu, *Nootka Sound* dicto. *D. Menzies*.—Ad littora Kamtschatica ejectum legerunt *Horner* et *Tilesius*.

Annua?

RADIX e fibris constans plurimis, perquam brevibus, crassiusculis, ejusdem cum fronde coloris et substantiæ, simplicibus, vel vagè divisis.

FRONDES cæspitosæ, bi-tri-pollicares, stipite assurgentes vix unam lineam longo, nec pennâ corvinâ crassiore, cylindraceo, sed apice expanso, quod nunc subito nunc sensim accidit, in tubulum marsupiformem, in his oblongum, in illis ovatum, digito indice crassiorem. Frons lenti acriori subjecta punctis minutissimis sparsis ubique pertusa apparet.

FRUCTIFICATIO nondum detecta.

COLOR recentis, nî fallor, intensè rufus, olivaceo perfusus; citò tamen evanidus, et in sordidè virescentem, lutescentem, albicantemve transiens.

SUBSTANTIA membranacea.

Quatuor illa, quæ in hac tabulâ depinguntur, exemplaria eundem, nisi fallor, *Fucum* effingunt; cùm tamen e disitis sint accepta locis et facie aliquantum inter se discrepent, cuncta delineanda existimavi, nihil pro indubiò locuturus de plantâ, quam neque recentem neque fructiferam vidi. In delineandis maximè profuit Mertensii benevolentia jam sæpe in hoc opere laudata; contulit enim ille stirpis Kamtschaticæ delineationem ad specimina recentia confectam. Descriptio verò nostra Menziesianam respicit, cui substantia tenuis, et frons infrâ quasi in stipitem distinctum attenuata. In his recedit a Tilesianâ gaudente texturâ ad coriaceam accedente et fronde tubulosâ omninò sessili.* Tertii adhuc Fuci exemplaria, his adeò affinis ut an distinctus sit dubitaverim, e Novâ Hollandiâ misit *D. Brown*. *F. allantoidem* ipse in MSS. appellavit, nomine desumpto a similitudine quæ inter Fuci sui cæspitem et lucanicarum fasciculum interest. Tenuissimus hic et, Ulvarum plurimarum iustar, extrinsecùs quodammodò gelatinosus: intùs totus gelatinâ pellucidâ repletus. Forma insignitè pyriformis, ut siccata *F. Radulam* figurâ referat: sed puncta minuta in superficie sparsa ad *Asperococcus* Lamourouxianos relegandum suadent. Hujusce auctoris *A. bullosus*, quantum ab icone colligere licet, certè non multum discrepat, fortasse nihil. Lepechini figuram suprâ citatam citavi fide Mertensii. In Fucorum dispositione a Lamourouxio nupèr datâ, *F. saccatus* Delesseriis adjungitur; loco delecto proximo *F. eduli* et *F. palmato*. Neque negandum est quin, si sit ab exsiccatis judicandum, hæc stirpes sint inter se affines; sed idem de recentibus vix valebit; et quis de affinitatibus stirpis tam anomalæ quàm hæc nostra pronuntiabit?—Sed ut, *F. saccato* omisso, breviter de *Delesseriis* loquar, inter has recensentur etiam *F. sanguineus*, *F. rubens*, atque alii quidam, neque iis jam memoratis neque sibimet ipsis mutuò connexi. Specierum igitur minuendus erit numerus, sed non, ut spero, mutandum generis nomen, quod testatur merita nobilissimi Baronis Delessert, viri non modò Rei Botanicæ cultoris atque patroni, verum etiam iuter illos numerandi quibus et præsens superbit et postera superbibit ætas.

- a. a. *F. saccatus*, a *Nootka delatus*, magn. nat.
- b. frondis ejusdem pars inferior, magn. auct. 6.
- c. frondis pars - - - - - 1.
- d. d. *F. saccatus*, a *Kamtschatkâ delatus*, magn. nat.

* Mertensio quoque debeo descriptionem hujus Fuci ab ipso Tilesio scriptam, qui in Rossicâ circa orbem navigatione naturæ indagatoris munere functus est, maximamque eamque dignissimam famam consecutus est descriptione piscium Japoniæ, &c. Hanc descriptionem, cùm bella sit contineatque aliqua a me prætermissa, hic adjungendam putavi "Fucus marsupiformis, subcoriaceo-membranaceus, caule lineari, brevissimo, vel nullo, ex meris bursis saccatis, rufis, vel coccineis, aut niveis compositus, interdum et majoribus membranaceis, viridibus, fundo amplissimo, basi attenuatis, pedunculis brevissimis filiformibus inter se coherens, et aliis corporibus, Mytilis esculentis, ac lapidibus agglutinatus. Quosdam saccos arenâ nigrâ repletos dissecui; plerumque verò *F. saccati* integri bursæ ab undis nuper ejecti aquæ marinæ plenæ turgent, et donec comprimuntur ex fundo marsupiformi denis et pluribus fonticulis capillaribus aquam, syphonis hortulanorum ad instar, ejiciunt. Fundus sacci poris subtilissimis pertusus est, qui verosimillimè a fructificationibus, quarum quædam rarissimè nodulis sparsis occurrunt, remansere."

Fucus Potatorum, frond coriaceous, digitate; segments flat, oblong, simple, or dichotomous, nerveless, crenate, supported on a short, flat, linear, undivided stipes.

Fucus Potatorum. LABILL. *Pl. Nov. Holl.* II. p. 112. t. 257. *Enc. Méth. Bot. Suppl.* V. p. 423.

Laminaria Potatorum. LAMOUROUX, in *Mém. du Mus. d'Hist. Nat.* XX. p. 42.

On the shores of Van Diemen's Land, New Holland. *La Billardiére*.

Perennial.

Root, unknown to me.

FROND, a foot and half, and probably much more, in length, rising with a compressed, linear stem, scarcely three lines wide or as many inches high, slightly twisted, and undivided, but towards its upper part beset on both sides with foliaceous segments, or leaves, if I may use the expression, ten or more in number, placed without order in a distichous manner, and separated by very short intervals from each other, all of them oblong, flat, without nerve or midrib, above a foot and half long, and more than three inches wide in their widest part; some undivided, others, but this is more rare, irregularly forked, or even dichotomous; all so narrowed at the base as to appear almost as if supported upon compressed petioli, and all perforated here and there with irregular holes, uncertain both as to number and shape, and with their edges most minutely crenated: on the shape of the apices of the leaves, as of the roots, it is impossible to offer any thing decisive, M. La Billardiére having left them without mention.

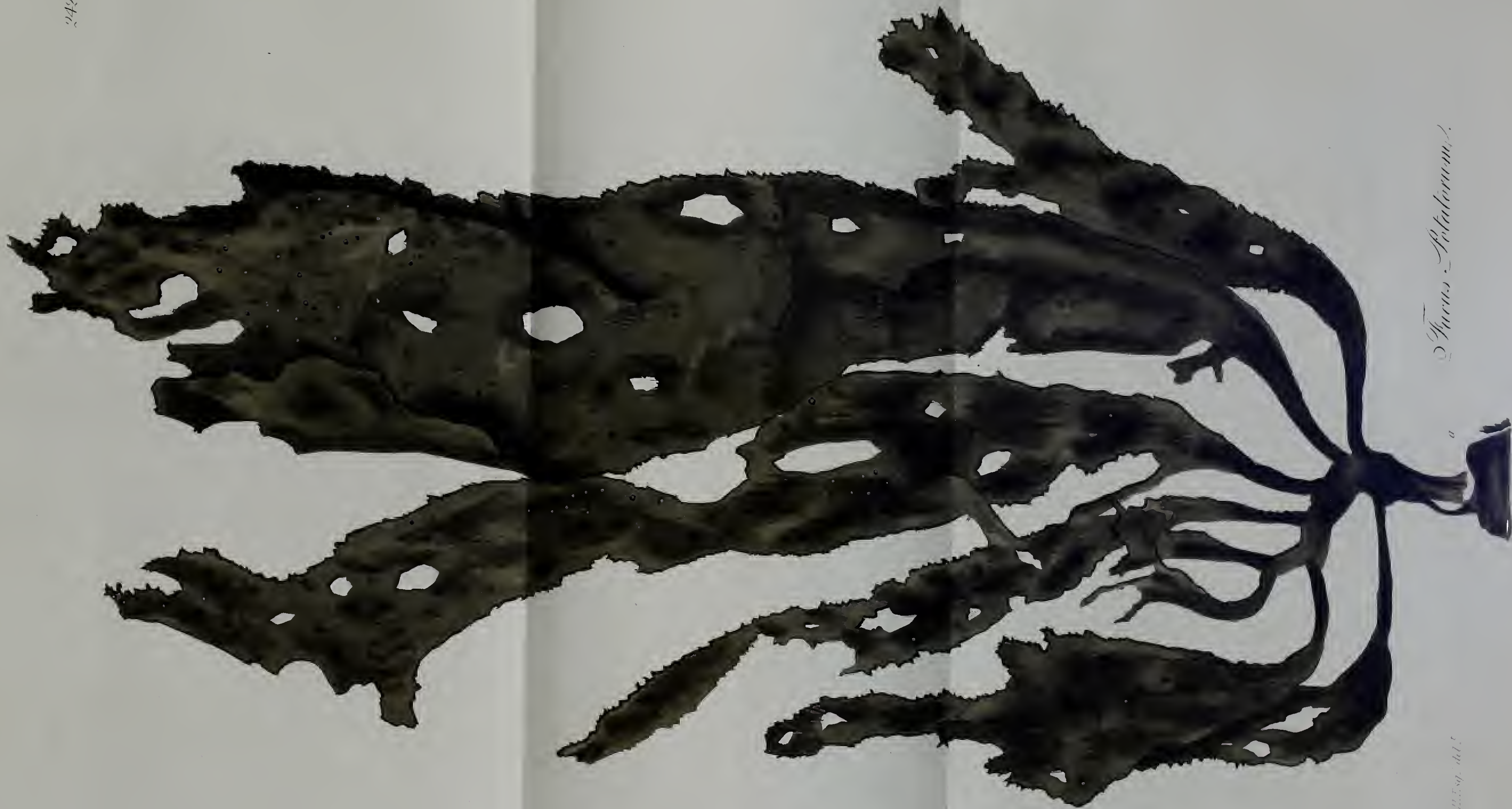
FRUCTIFICATION, at present undiscovered.

COLOR, olive-green, with a chesnut tinge.

SUBSTANCE, tough, as thick as leather.

The specimen of this *Fucus* here figured is the same as is also represented in M. La Billardiére's work, and is, I believe, the only one known to exist in Europe. It is preserved in the Great Herbarium in the Jardin des Plantes at Paris, where my friend, Mr. Hooker, made the drawing in the winter of 1814. According to the author of the *Plantæ Novæ Hollandiæ*, it is exceedingly small compared with what the plant is usually found, and not merely so, but is also only a part of an individual: the same Botanist assigned it the name it here bears, in consequence of having observed the natives of the woods around Van Diemen's Land use portions of its great leaves folded into the form of a pouch for the purpose of keeping fresh water. It is also on the same authority, that M. Lamouroux has, apparently with great justice, arranged it in his genus *Laminaria*, a family that includes *F. digitatus*, *F. buccinalis*, and others, to which *F. Potatorum* appears most closely allied. The character of this tribe is made by him to depend wholly on the "fibrous, branching root," and he observes of the species composing it, that it is these plants, so common in the southern seas and sometimes exceeding 500 yards in length, which furnish the inhabitants of Australasia with a proportion of their instruments, vessels, and food, while the natives of polar regions have likewise recourse to them for sustenance in times of scarcity, and draw from them a saccharine substance like manna, and abundance of forage for their cattle.

a. *F. Potatorum*, natural size.

*Fucus - Potatorum, L.*

Fucus, fronde coriaceâ, digitatâ; segmentis planis, oblongis, simplicibus dichotomisve, enervibus, crenato-dentatis, stipiti abbreviato, plano, lineari, indiviso insidentibus.

Fucus Potatorum. LABILL. *Pl. Nov. Holl.* II. p. 112. t. 257. *Enc. Méth. Bot. Suppl.* V. p. 423.

Laminaria Potatorum. LAMOUROUX, in *Mém. du Mus. d'Hist. Nat.* XX. p. 42.

HABITAT ad Capitis Van Diemen littora. *La Billardière*.

Perennis.

RADIX nondùm cognita.

FRONS sesquipedalis, aut forsàn multo longior, assurgens *stipite* compresso, lineari, vix tres lineas lato aut totidem pollices alto, lenitèr tortuoso, indiviso, sed apicem vèrsus utrinque obsito *foliis*, si ita loqui liceat, decem pluribusve, distichè absque ordine dispositis, intervallo inter singula brevi, oblongis, planis, absque costâ aut nervis, sesquipedem longitudine, et palmam ubi latissima sunt latitudine superantibus, his indivisis, illis, quod rarius, vagè bifurcis aut etiam dichotomè partitis, omnibus basi angustatis, ut petiolis compressis insidentia propemodùm dicas, et hìc illic vagè pertusis, margineque ubique minutissimè crenatis: de apicibus, utpote quos Labillardierus inmemoratos transiit, et quos ipse integros nondùm vidi, nihil est quod pro certo affirmare ausim.

FRUCTIFICATIO hactenus latet.

COLOR e castaneo olivaceus.

SUBSTANTIA spissa, coriacea.

Nolens in hoc opere delineatum sisto Fucum a me ipso nondùm visum; neque fecissem, nisi talis esset frondis forma atque indoles, qualis de speciei caractere non dat dubitationi ansam. Unum modò, quod scio, extat in Europâ *F. Potatorum* exemplar. Hoc in Horti Regii Parisiensis museo servatur; idemque exhibet tabula hæc nostra et Labillardieriana suprâ citata. Sed hoc quoque, teste ipso a quo lectum est, minimum et haud integrum; quo tamen nihilominùs in descriptione totus ferè sum nisus; cùm descriptio, in *Specimine Plantarum Novæ Hollandiæ* data, plus æquo brevis paullulum modò materie ad emendandam suppeditet. Nomen imposuit ipse Labillardierus, quòd "in ejusdem amplis foliorum partibus resectis, et in Marsupii formam dispositis, aquam dulcem potandam asservant Capitis Van Diemen sylvicolæ." Idem quoque vir celeberrimus Lamourouxio suasit ut *Laminariis* suis associaret; quod benè factum nemo negabit; includit enim hoc genus *F. digitatum* etiam et *F. buccinalem* et quosdam alios *Fuco Potatorum* maximè, ut videtur, affines. Hujus suæ familiæ character totus a *radice fibrosâ et ramosâ* pendet: brevis hic quidem, et qui desumitur, sicut ipse agnoscit, a parte quam multi Botanici Fucis omninò denegaverunt. *Laminariæ*, ut Lamourouxii verbis Latinè redditis utar, sunt plantæ perquàm vivaces; includitque hæc tribus Fucos illos mole giganteâ præditos, quorum longitudo interdùm trecentum ulnas æquat, et qui in oceano Australi copiosissimè proveniunt. Hi instrumenta, vasa atque alimenta Australasiæ incolis suppeditant; dum gentes sub utroque polo sitæ iisdem, si annona desit, pro cibo utuntur, succumque saccharinum a foliis colligunt, et pabulum pecudibus utilissimum inveniunt.

a. *F. Potatorum*. magn. nat.

Fucus Claudei, frond filiform, subdichotomous, reflexed in a falcate manner towards the summits, on one side beset with horizontal, parallel fibres, connected with other transverse ones, so as to represent the skeletons of oblong leaves, the half of which has been taken off: capsules lanceolate, scattered among the fibres.

Claudea elegans. LAMOUROUX, in *Mém. du Mus. d'Hist. Nat.* XX. p. 121. t. 8. f. 2.

On the coast of New Holland. Péron.

Annual?

Root, a small callous disk.

FROND, about seven inches long, consisting of a cylindrical, filiform stem, not thicker than packthread, divided at irregular intervals, in a dichotomous manner, into several branches between patent and divaricated, with their apices recurved: all these branches are leafy, if such an expression may be applied to them, but in a manner of which I never saw or heard of any other example in the vegetable kingdom: hastily regarded, the whole plant appears, like *F. sanguineus* and many others, to consist only of a *stipes* supporting a number of leaves, the whole of which have lost exactly one half of their membranous part, while the remaining side is most curiously reduced to the state of a skeleton, its fibres alone being left it: but the matter, if carefully examined, appears very different; for the *fibres* are evidently not denudated, as might have been supposed; and it is equally clear that they never grew from more than one side of the branches; these, which, as above mentioned, are only an elongation of the stalk, they resemble both in texture and color, forming with them right angles; like them, too, they are elegantly bent; their length exceeds half an inch, and they run parallel to each other, issuing from the branches at intervals of scarcely a line each; their apices are acuminate: all of them, from end to end, are connected by a second series of fibres, more slender than the first, but disposed in the same way, equally originating at right angles and preserving their parallelism, and separated by nearly the same intervals; and, again, from these comes a third set, which only differ in being shorter and not so regularly parallel: hence the shape of the interstices between the last is not constant; but the plant, taken collectively, forms a most beautiful net-work.

FRUCTIFICATION, small, pod-like capsules, scattered among the fibres of the second series, or, rather, occupying their places, each containing six or more deep-red, roundish seeds, placed in a double row.

COLOR, a bright and beautiful pink; sometimes too, on the authority of Lamouroux, tinged with green, yellow, or purplish, all which may occasionally be found united on the same specimen: in a dried state it becomes darker.

SUBSTANCE, membranaceous, and thin; but tough in the stem.

Obs. In drying, it adheres to paper.

It is to M. Lamouroux that we owe the first description and figure of this plant, both of them probably made from the very specimen here represented, which is preserved in the Museum of the Jardin des Plantes at Paris. M. Lamouroux very justly observes, that he is acquainted with no marine production, whether plant or zoophyte, whose appearance is so remarkable as that of this *Fucus*, or which unites, in an equal degree, variety in colors, elegance in general habit, and delicacy of organization. Struck with it therefore, as the most beautiful and extraordinary of the marine Algæ, he called it after the name of his father, M. Claude Lamouroux, forming from it, and, as must be admitted, most justly, a new genus, to which he assigns the following character:—"Tubercula in siliquam elongata, extremitatibus ad nervos adfixa."

a. *F. Claudei*, natural size.

b. part of the frond, magnified - 6.

c. part of the same - - 4.

Fucus, fronde filiformi, subdichotomâ, apices versus falcato-reflexâ, hinc fibris horizontalibus, parallelis, per transversas connexis, folia oblonga dimidiata referentibus, obsitâ: capsulis lanceolatis, inter fibras sparsis.

Claudea elegans. LAMOUROUX, in *Mém. du Mus. d'Hist. Nat.* XX. p. 121. t. 8. f. 2.

HABITAT in Novæ Hollandiæ oris. Péron.

Annua?

RADIX callus exiguus.

FRONS spithamæa et ultrâ, instructa *caule* terete, filiformi, vix fili emporetici crassitie, in ramos aliquot patentidivariatos, apicibus falcato-recurvis, sparsim dichotoma: hi *rami* omnes, ut ita dicam, foliosi, sed qualiter nullum aliud, quod scio, in regno vegetabili exemplum occurrit: si obiter inspicias, crederes totam plantam constare e stipite folia plurima sustentante, quorum tamen, quod mireris, casus aliquis unum latus abrasit, dum pars relicta skeleton modò exhibet, membranâ prorsus deperditâ et fibris tantum restantibus: cautiùs investiganti rem aliter sese habere liquet; fibræ enim, quæ folium mentiuntur, certò, ut videtur, nunquam nisi ex uno ramorum latere oriuntur: ramos ipsos, qui sunt, ut suprâ memoravi, stipes productus, et cum quibus angulum ferè rectum effingunt, colore texturâque referunt, eorundem quoque instar sunt curvuli; semipollicem longitudine superant; suntque mutuò parallelæ, intervallisque vix lineam longis a se invicem segregatæ, apicibus acuminatis; has omnes inter se, ab ortu ad apicem usque, connectit secunda fibrarum series, tenuiorum, attamen simili modo dispositarum iisdemque ferè intervallis distinctarum; atque iterum ex his tertia oritur series, quæ, si non ita constanter sint parallelæ, semper eundem servant cum præcedentibus angulum, efficiuntque ut totum *folium* rete exhibeat perpulchrum et quasi ex artis legibus factum.

FRUCTIFICATIO *capsulæ* exiguæ, siliquiformes, inter fibras secundæ seriei sparsæ, vel potiùs earum situm occupantes, singulæ includentes sex plurave semina intensè rubra, subrotunda, bifariam disposita.

COLOR amcenè roseus; et aliquandò, teste Lamourouxio, viridi, luteo, violaceove perfusus, quos omnes pulcherrimè immixtos confusosque licet in uno interdum exemplare conspicere: in *exsiccatâ* fit intensior.

SUBSTANTIA membranacea, tenuis, attamen in caule tenax.

Obs. Per-desiccationem adhæret chartæ.

Lamourouxio debemus solas quæ hucusque extiterunt hujus Fuci descriptionem atque iconem; idemque ejus laudes optimè prædicavit, asserendo se nihil in vasto Oceano cretum scire, sitne animali sitne vegetabili regno ortum, quod huic ob pulchritudinem componatur; spectetur enim habitus, quod aiunt, generalis elegantia, colores suavissimè immixti variatique, aut formæ exquisitæ venustas, et simile non extare, secundum ægrè reperiri. Talia forsán nimis altè sonant; in Fuco autem certè perpulchro et a reliquis quàm longè abludente, nemo non mirabitur divini Artificis dextram, neque, cùm stirpis ipsius formam laudat, negabit laudes viri optimi pietati debitas, quâ factum est ut novum et a plantâ dilectissimâ constitutum seligeret genus, cui nomen sui patris* imponeret. Idem et ego nomen, sed pro specifico, servavi; genericum verò postea restitutus; genus enim indubium *Fucus Claudei* efficiet, neque ullum alium scio qui eidem associetur.

- | | | |
|--------------------------------------|-------|----|
| a. <i>F. Claudei</i> , magn. nat. | | |
| b. <i>frondis pars</i> , magn. auct. | ~ | 6. |
| c. <i>ejusdem portio</i> | - - ~ | 4. |

* M. Claude Lamouroux:—character generis his verbis definitur: "*Tubercula in siliquam elongata, extremitatibus ad nervos adfixa.*"

Fucus squamarius, fronds coriaceous, reniform, entire at the margin, sessile, clustered, imbricated, furrowed with concentric circles, naked on the upper, woolly on the under side: tubercles oblong, flattened, sessile, scattered over the upper surface of the frond.

Fucus squamarius. GMELIN, *Hist. Fuc.* p. 171. t. 20. f. 1. WULFEN, *Crypt. Aquat.* No. 5. *Fl. Atl.* II. p. 427. CLEMENTE. p. 308.

Ulva squamaria, LINN. *Syst. Nat. Ed. Gmel.* II. p. 1390. *Fl. Fr. Ed.* 2^a. II. p. 17. *Fl. Gall. Syn.* p. 7. *Enc. Méth. Bot.* VIII. p. 162.

Dictyota squamata. LAMOUROUX, in *Ann. Soc. Hist. Nat. Paris.* XX. p. 272.

Zonaria squamaria. DRAPARNAUD. (*ined.*?) AGARDH, *Syn. Alg. Scand.* p. xx.

Zonaria deusta. AGARDH, *Syn. Alg. Scand.* p. xx. and p. 40.?

Fucus fungiformis. *Fl. Norv.* II. p. 187.?

Fucus *Fl. Dan.* t. 420.?

In the Mediterranean. Gmelin.—At Trieste, in the Adriatic, on the woody stem of *F. selaginoides*. Wulfen.
—About Cadiz. Clemente.—In Iceland? Konig.

Perennial.

ROOT, an expanded, shapeless, callous disk, two lines, or even more, in diameter, closely adhering to its native rocks, and thickly beset with a very short, light-brown, woolly coating, which sometimes also creeps over the lower part of the frond.

FRONDS, growing in tufts, flat, without midrib or veins, narrow at first, but soon widening, and spreading into an orbicular shape, which outline it with great regularity preserves while young, or still in perfection; and then, to quote the words of Wulfen, "it grows in an irregularly imbricated manner, like parasitic *Agarici* or *Elvellæ*," (he might have compared it better to an *Auricularia*), "collected into masses, uniform and inclining to be lobed:" of these masses the diameter is full three inches; in old plants, the lower part of the frond becomes elongated and narrowed, and looks like an uneven lacerated stipes, to whose apex, as well as to either side, are attached many clustered, sessile, reniform, rather curled leaves, some undivided, others lobed, all quite entire at the margin:—the frond, as well in its earliest as in its latest state, is marked all over on its upper side with parallel, concentric, depressed lines, each at a short distance from the other, which on the underside are answered by the same number of projecting lines: this side is usually more or less woolly, though sometimes naked; the other is entirely naked. If examined through a high magnifier, the whole frond is found to be formed of a mass of parallel, most closely united fibres, running from the root to the apex without any other interruption than that of the concentric circles just mentioned, which probably denote the age of the plant, though how far such is really the case, I have had no means of ascertaining in this or any similarly formed *Fucus*.

FRUCTIFICATION, small, hemispherical, somewhat flattened, sessile *tubercles*, scattered about the surface of the frond, and of the same color and substance as that, containing a mass of oblong seeds mixed with fibres.

COLOR, a deep brown, tinged with crimson, more pale towards the edges; blackish when dry, but turning white from long exposure to the sun.

SUBSTANCE, coriaceous, flexible, and tough.

Of this *Fucus*, as an interesting plant, I am happy to have it in my power to offer a figure that may prove so far satisfactory, as to remove it from doubt in future. At present it is scarcely known, except by that of Gmelin, which cannot be regarded so. Though never yet found upon the shores of Britain, it appears to be no unfrequent inhabitant of those of the Mediterranean; and, if I am right in my quotation from the *Flora Danica*, is also a native of the remote coasts of Iceland. Its general appearance is so entirely that of an *Auricularia*, that, were it not for its woolly base, it might easily at first sight be regarded as a real anomaly in nature, a submarine Fungus. Its far more thin substance, however, and appearance subdiaphanous when exposed to the light would soon forbid such a supposition. In these respects it agrees considerably with some of the Lichens, among which it has been compared by Decandolle to the *Peltidea canina*, but might be more justly likened to *Sticta fuliginosa*. Different specimens vary exceedingly in size: that which is here figured is one of the largest I have seen; while the reniform leaves of those sent me by Clemente, scarcely equal half an inch in length, and in breadth do not much exceed it. Of this latter kind seem to be the plants found in the North, which I have referred, though with doubt, to this species, trusting principally to the excellent description given by Agardh. The only material differences he states between his *Zonaria deusta* and *Z.*

squamaria lie in the smaller size of the former, in its having its frond smooth on both sides, and in its more rigid texture, all which particularities I know by my specimens to be liable to variation. The figure in the *Flora Danica* has, according to him, been supposed by Vahl to represent the caliciform bases of *F. loreus*. The resemblance between *F. squamarius* and *Ulva pavonia* did not escape Gmelin, and has been noticed by Wulfen and other subsequent writers. They must unquestionably stand hereafter in the same genus, respecting which a few remarks will be found under the next plate. The difference in their fruit is most surprizing; for *Ulva pavonia* is well known to produce seeds like those figured in *F. membranaceus* in this work; and such is the natural fructification of the family. Yet I could find nothing like it in *F. squamarius*, nor any thing but what is here represented. I cannot, therefore, but suspect error, nor can I help fearing it rests with me; but, as far as I am able, I lay before my readers what my eyes have seen; and thus, like Gerard with his goose-tree, though mistaken myself, may lead at last to the discovery of truth.

a. Tuft of <i>F. squamarius</i> , natural size.						
b. single frond.						
c. under-side, magnified	-	-	-	-	-	6.
d. tubercle, cut vertically	-	-	-	-	-	3.
e. seeds and fibres	-	-	-	-	-	2.
f. fibres	-	-	-	-	-	1.
g. seeds	-	-	-	-	-	1.

244.—FUCUS SQUAMARIUS.

Fucus, frondibus coriaceis, reniformibus, integerrimis, sessilibus, aggregatis, imbricatis, concentricè rugoso-sulcatis, suprà nudis, subtùs tomentosis: tuberculis oblongis, depressis, sessilibus, sparsis.

Fucus squamarius. GMELIN, *Hist. Fuc.* p. 171. t. 20. f. 1. WULFEN, *Crypt. Aquat.* No. 5. *Fl. Atl.* II. p. 427. CLEMENTE. p. 308.

Ulva squamaria. LINN. *Syst. Nat. Ed. Gmel.* II. p. 1390. *Fl. Fr. Ed.* 2^a. II. p. 17. *Fl. Gall. Syn.* p. 7. *Enc. Méth. Bot.* VIII. p. 162.

Dictyota squamata. LAMOUROUX, in *Ann. Soc. Hist. Nat. Paris.* XX. p. 272.

Zonaria squamaria. DRAPARNAUD. (*ined.*?) AGARDH, *Syn. Alg. Scand.* p. xx.

Zonaria deusta. AGARDH, *Syn. Alg. Scand.* p. xx, et p. 40.?

Fucus fungiformis. *Fl. Norv.* II. p. 107.?

Fucus *Fl. Dan.* t. 420.?

HABITAT in Mari Mediterraneo. Gmelin.—Tergesti, in Adriatico, super trunco coriaceo lignescente *Fuci selaginoidis*. WULFEN.—Circa Gades. Clemente.—In Islandiâ? Konig.

Perennis.

RADIX callus explanatus, difformis, diametro bilinearis aut etiam ultrà, saxis quibus innascitur arctè adhærens, et tomento dilutè fusco, brevissimo densè obsita, quod interdùm quoque frondis partem inferiorem perrepat.

FRONDES cæspitosæ, planæ, absque venis nerveoque, ortu angustæ, sed statim dilatatæ, et in figuram reniformi-orbi-

cularem expansæ : sic ferè stirps in ætate florente aut juniore conspicitur, et tum, ut Wulfenii verbis utar, "*Agaricorum* aut *Elvelarum* parasitarum" (*Auriculariarum* rectiùs dixerit) "more, corporibus submarinis subimbricatim innascitur, copiosè aggregata, reniformis, sublobata;" cæspitum horum diameter tripollicaris; in ætate propectâ pars frondis inferior elongata et angustata stipitem mentitur inæqualem lacerumque, cui ad apicem et ad utrumque latus absque normâ affiguntur folia conferta, sessilia, reniformia, crispula, hæc indivisa, illa lobata, omnia margine integerrima :—frons vel in primâ ætate, et usque ad interitum, in parte superâ sulcis parallelis, concentricis, exiguo intervallo dissitis ubique exarata conspicitur, quibus in inferâ respondent costæ totidem protuberantes : frondis pagina superior nuda, inferior plerumque plùs minùs tomentosa, sed aliquandò hæc etiam denudata. Per lentem maximè augmentem observata et luci forti obiecta, tota frons constare reperitur e congerie fibrarum parallelarum arcuè appressarum a radice ad apicem percurrentium, hic illic autem distinctarum per zonas concentricas suprâ memoratas, quæ an stirpis ætatem denotent an cuilibet alii fini inserviant, posteris feliciore omine investigandum nolens relinquo.

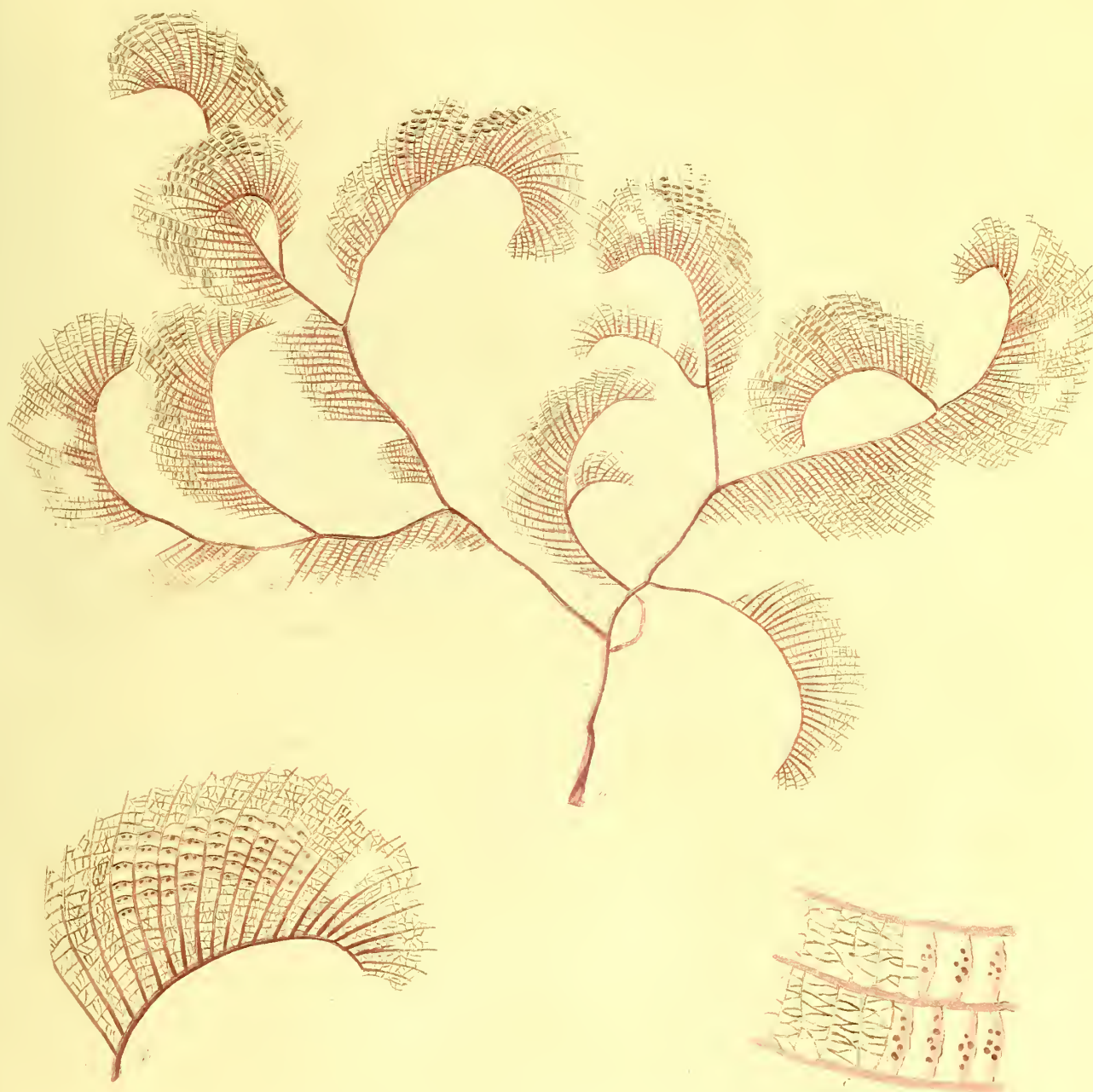
FRUCTIFICATIO tubercula exigua, hemisphærica, depressa, sessilia, frondi sparsim imposita, et ejusdem quæ illi substantiæ atque coloris, includentia congeriem seminum oblongorum, fibris aliquot immixtis.

COLOR in recente saturatè sanguineo-fuscus, apices versus pallidior; *exsiccata* nigricans; *soli diu obiecta* albescit.

SUBSTANTIA coriacea, flexilis, tenax.

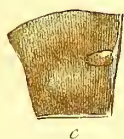
Quàm dulce sit novas pulchrasque describere stirpes, et nondùm cognitæ in lucem proferendo fulgoris quiddam laboribus nostris perfundere, scit solus Botanicus; sed, quamvis humiliter, vix minùs gratum et certò non minùs utile est pendum eximere scrupulos hærentes individuis vixdùm satis cognitis, nomina licet diu innotuerint. Hoc spero de *F. squamario* eventurum, cujus nulla, præter Gmelinianam, hactenus extat icon, nisi quidem ea *Flora Danica*, quam dubiè citavi, hùc verè pertineat. Sed, utut hoc sit, res non aliter sese haberet; utraque enim harum est talis qualis tenebras potiùs offundat quàm auferat. In Mari Mediterraneo et in vicinis littoribus reperitur *F. squamarius* haud parcè: est etiam, si *Flora Danica* rectè citetur, Islandiæ orarum incola: in Angliâ, quantumvis inter has regiones mediâ, nemo legit. Fungi faciem insignitèr præ se fert, et eo usque ut quivis obiter modò visam faciliè *Auriculariam* marinam, rem in Botanice inauditam, crederet. Attentiùs intuenti radix villosa, substantia tenuis et color subdiaphanus Zonariam arguunt. Colore et substantiâ multùm Plantis Lichenosis convenit, inter quas *Peltideæ canina* assimilavit Decandollius, qui tamen rectiùs *Stictam fuliginosam* dixisset. Quoad magnitudinem, exemplaria multùm inter se discrepant. E magnis hìc depingitur: contrâ Hispanorum folia reniformia semipollicem longitudine vix æquant, latitudine vix exuperant. Talia quoque videntur septentrionalia, et præsertim illa ab Agardhio sub *Zonaria deusta* nomine memorata. Optimam ille suæ plantæ descriptionem ex more dedit, in quâ præcipua inter *Zonariam squamariam* et *Z. deustam* discrimina in hoc ponit, quòd huic statura sit minòr, textura tenuis, et utraque frondis pagina paritèr lævis. Omnia tamen hæc, ut expertus scio, mutationibus sunt obnoxia. Agardhium quoque testem habemus b. Vahlum credidisse iconem *Flora Danica* suprâ citatam exhibere modò *F. lorei* bases calyciformes. Gmelinum non latuit similitudo quæ inter *F. squamarium* et *Ulvam pavoniam* interest, plantas indubiò in systemate proximè locandas. Idem quoque memoraverunt Wulfenius et alii. De genere cui utrasque Lamourouxius adjecit, paucis sub Fuco insequente disseram. Cùm tamen omnes quotquot hoc genus complectitur species indole magnoperè inter se convenient, neque ullæ magis quàm eæ jam memoratæ, nemo non mirabitur quòd fructum ferant dissimilem. In hoc quoque aliquid erroris inesse suspicor; fert enim *Uva pavonia* semina in zonis nuda, qualia in omnibus quærenda sunt Zonariis; dum nihil simile in *F. squamario* vidi, neque aliquid præter tubercula hìc depicta. Me igitur errorem esse inductum nequeo non suspicari; sed, ut optimi nostri Gerardi verbis utar, "quod oculi mei viderunt depingi curavi;" et si, illius instar, aliquid tan a vero abhorrens quàm arborem anatiferam exhibeam, hallucinanti condonabunt, ut spero, lectores; ipse certè hallucinationes, quàm primùm detegentur, agnoscam emendaboque.

a. <i>F. squamarius</i> , magn. nat.						
b. frons una, seorsum.						
c. ejusdem pagina inferior, magn. auct.	-	-	-	-	-	6.
d. tuberculum verticalitèr dissectum	-	-	-	-	-	3.
e. semina et fibræ	-	-	-	-	-	2.
f. fibræ	-	-	-	-	-	1.
g. semina.	-	-	-	-	-	1.



Fucus Clavatus.





Fucus squamarius.



Fucus, fronde cartilagineo-membranaceâ, planâ, lineari, dichotomâ, mediotenus uninervi, apices versus circulis concentricis notatâ; margine lacero; apicibus rotundato-truncatis: seminibus in circulis concentricis, sparsis, nudis.

Dictyota interrupta. LAMOUROUX, in *Bull. Phil. Idem, in Journal de Botanique*. II. p. 41. (sub *D. subarticulatâ* nomine); et in *Annales du Mus. d'Hist. Nat.* XX. p. 272. t. 12. f. 1.

HABITAT in Novæ Hollandiæ oris. *D. King.*

Perennis.

RADIX callus orbicularis, planus, crassiusculus, nigricans, superficie totâ villosâ, fibris densis, fuscis, articulatis, variè ramosis, quæ perrepunt etiam frondis partem inferiorem.

FRONDES ex eâdem basi duæ vel tres, semipedales, ortu compressæ, et circitèr sesquilineam latæ, exinde sensim sed lenissimè complanatæ et attenuatæ, ut cum ad unius alteriusve pollicis altitudinem attigerint planæ fiant, habeantque latitudinem quæ ad apices immutata permanet semiunguicularem: exiguo a basi intervallo sunt divisæ; ratione nunc bifurcâ, nunc vagè palmatâ, et postea octies sæpiùsve simili modo ramosæ, segmentis patentibus, quoad longitudinem incertissimis, omnibus e basi plùs minùs angustatâ sursùm dilatatis, apicibus levissimè rotundatis, ut potiùs truncati videantur, marginibus enormitèr incis et sub-sinuatis: frondem mediotenus percurrit nervus angustus, nigricans, crassiusculus, cujus nulla sunt vestigia in parte superiore, sed hæc striis tenuissimis, rubris, parallelis, et circulis concentricis, transversis, atro-fuscis, aliquot linearum intervallo sejunctis notata conspicitur:—frons, ubicunque læditur, præsertim si sit juxta circulos concentricos, ex apice prolifera evadit, ramis e basi angustatâ cuneiformibus, ipsis non rarò iterùm atque iterùm simili modo pullulantibus.

FRUCTIFICATIO semina nuda, dilutè, lætè tamen, rubra, in circulis concentricis sparsa: anne autem sint in unâ modò an in utrâque frondis paginâ sita, et an frondi superimposita an in illâ innata, non satis mihi liquet.

COLOR infrâ fuscus, opacus, suprâ lateritius, sub-pellucidus, ubique nitoris expers.

SUBSTANTIA infrâ cartilaginea, crassa, suprâ membranacea, tenuis.

OBS. Unam alteramve *Sertulariæ* speciem nondùm descriptam et *Corallinam officinalem* vidi perreptantem hujus Fuci basin:—ob substantiam mucò carentem nequaquam adhæret chartæ.

Hic quoque debetur *Fucus* viri cl. Lambertii amicitia: Lamourouxii *Dictyotis*, *Zonariis* olim a Draparnaldio dictis, liquidò est annumerandus; sed frons costata, ab harum omnium indole abludens, efficit ut in medio familiæ præ cæteris naturæ congruentis anomalus stet et quasi extraneus. Hinc ortum quoque est aliquid dubitationis, an synonymon suprâ citatum hùc jure referatur; vix enim talem notam præterierit auctor: in reliquis autem ita convenit ut citare sustulerim. Quod sequitur est character specificus in *Diario Botanico* datus: “fronde sub-lineari, ramosâ, isthmis alternis vel oppositis interruptâ, extremitatibus obtusis.” *Dictyotis* suis viginti tres species ascripsit Lamourouxius, inter quas *F. interruptus* hic noster et *F. squamarius* soli in hoc opere reperientur. E reliquis multæ sunt quarum nullæ hactenus descriptiones extant: descriptarum plurimæ Ulvis sunt recensitæ. Character hujus generis essentialis constat e “capsulis approximatis in maculas, et e maculis in lineas variè flexas.” Genus in duas distribuitur sectiones, quarum prima fert fructum in lineis transversis, concentricè incurvis. Hæc *Ulvam Pavoniam* et congenere complectitur, et *Padina* appellatur a Lamourouxio, quo nomine totam olim familiam Adansonius dixerat. In alterâ semina jacent in “lineis longitudinalibus, rarò transversis, nunquam concentricis, sæpe omninò aut partim sparsis.” Totus Ordo *Dictyoteæ* audit, dignosciturque structurâ internâ reticulatâ foliaceâque, et colore viridescente, nunquam, quantumvis luci objiciatur, nigricante.

a. <i>F. interruptus</i> , magn. nat.							
b. <i>frondis pars summitatem versus</i> , magn. auct.	-						6.
c. <i>ejusdem portio</i>	-	-	-	-	-	-	4.
d. <i>apex</i>	-	-	-	-	-	-	4.
e. <i>semina</i>	-	-	-	-	-	-	2.

Fucus interruptus, frond between cartilaginous and membranaceous, flat, linear, dichotomous, midribbed to half its height, in the upper part marked with concentric circles; margins ragged; apices between round and truncated: naked, scattered seeds in the concentric circles.

Dictyota interrupta. LAMOUROUX, in *Bull. Phil. Idem*, in *Journal de Botanique*. II. p. 41. (sub *D. sub-articulata* nomine); et in *Annales du Mus. d'Hist. Nat.* XX. p. 272. t. 12. f. 1.

On the Coast of New Holland. Governor King.

Perennial.

ROOT, an orbicular, flat, rather thick, blackish, callous disk; its whole surface covered with a mass of closely matted, brown, jointed, variously branched fibres, which occasionally also creep over the lower part of the frond.

FRONDS, two or three from the same base, half a foot long; at their origin compressed, and about a line and half wide, but immediately increasing in width and diminishing in thickness, so that by the time they have reached the height of an inch or two, they become quite flat and attain to a width of about four lines, which they preserve unaltered to their extremities: at a very short distance from the root they are divided, sometimes in a forked, and sometimes in an irregularly palmate manner, and they are afterwards eight or ten times branched in the same way: the segments are patent, very irregular in point of length, all, like the primary shoots, more or less narrowed at the base, as if the ramification were the result of a proliferous mode of increase arising from injury rather than of the nature of the plant; the apices are very slightly rounded, so as almost to appear truncated; the margins are irregularly cleft and subsinuated: a narrow, blackish midrib is observable in the frond to half its height, but there entirely disappears; the upper part of the frond, however, is distinctly marked with very minute, red, parallel, longitudinal striæ placed close together, and originating from a fibrous structure, and with dark-brown, transverse, concentric circles, separated from each other by intervals of a few lines each:—in case of any injury to the frond, especially near the concentric circles, it is proliferous from its summit, the young branches being cuueiform from an extremely narrow base, and not unfrequently throwing out other shoots in the same manner.

FRUCTIFICATION, naked seeds, of a pale, but bright, red color, scattered over the concentric circles, but not enveloped, as far as I have seen, with any pellucid integument; nor have I been able to ascertain how far they are confined to one side of the frond, or whether they lie upon it, or are imbedded in it, or are originally, like those of *F. membranaceus*, covered with a membranaceous pellicle.

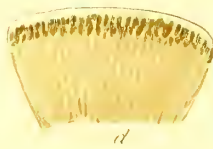
COLOR, brown and opaque below, a dull brick-red and semipellucid above; every where destitute of gloss.

SUBSTANCE, in the lower part, cartilaginous and thick; in the rest, membranaceous and thin.

Obs. Attached to the base of this *Fucus* were one or two nondescript species of *Sertularia*, and *Corallina officinalis*.—On account of the total absence of all viscous matter from its surface, it does not in the least adhere to paper.

This is another of the Fuci for which I am indebted to Mr. Lambert, to whom it was communicated by Governor King, from New Holland. Though undoubtedly belonging to the *Dictyota* of Lamouroux, the *Zonaria* of Draparnaud, its midribbed frond renders it an anomaly in the midst of a tribe more than almost any other natural; and the circumstance of no mention being made of so extraordinary a peculiarity is the only thing that causes me to entertain any doubt how far this plant is really the *Dictyota interrupta*, as above quoted; the specific character given in the *Journal de Botanique*, “fronde sub-lineari, ramosâ, isthmis alternis vel oppositis interruptâ, extremitatibus obtusis,” is in all other respects characteristic of it. This plant, and *F. squamarius*, are the only two species of the Lamourouxian *Dictyota* figured in this work; but the author of that genus has referred to it no less a number of species than twenty-three, among which the few that are yet generally known have previously been classed with the *Ulvæ*. The essential character of the *Dictyota*, according to Lamouroux, consists in the seeds being collected into masses, and these again into lines, which are bent in various directions; and he divides them into two sections, in the first of which, including *Ulva pavonia*, &c., the seeds lie in transverse concentric circles, while in the second they are situated in lines which are commonly longitudinal: sometimes, however, though rarely, these also are transverse, but never concentric: often they are broken and variously scattered. The first of these sections he has denominated *Padina*, the name by which Adanson had previously proposed to call the genus, and by which Lamouroux desires that this division should be called, in the event of the two being hereafter made, as he anticipates, distinct; thus rejecting wholly, I am sorry to say, the more appropriate term for the family, *Zonaria*.

- | | | | | | |
|--|---|---|---|---|----|
| a. <i>F. interruptus</i> , natural size. | | | | | |
| b. upper part of the frond, magnified | - | - | - | - | 6. |
| c. part of the same | - | - | - | - | 4. |
| d. summit | - | - | - | - | 4. |
| e. seeds | - | - | - | - | 2. |



Fucus interruptus.

Fucus, fronde planâ, cartilagineâ, enervi, oblongâ, integerrimâ, margine superficieque proliferâ : receptaculis ovato-sphæricis, breviter pedunculatis, compressis, fasciculatis, supra utramque paginam sparsis.

Fucus ovifrons. MOHR, in *Beiträge*. I. p. 303.

Delesseria botryocarpa. LAMOUREUX, in *Ann. du Mus. d'Hist. Nat.* XX. p. 126.

HABITAT ad Caput Bonæ Spei. *Horneman*.

Perennis?

RADIX nondum a me visa.

FRONS semipedalis, aut forsân multò longior, (integram enim nondum vidi,) vagè ramosa, singulis ramis foliiformibus, oblongis, tri-quadri-pollicaribus, planis, nervi venarumque expertibus, margine integerrimis, apice rotundatis, basi in stipitem perbreven, compressum, filiformem attenuatis : horum ex marginibus aut aliquandò ex ipsâ superficie, oriuntur alia folia, absque normâ sparsa, haud ita frequentia, primariorum similia, nisi quòd duplo triplove sint minora.

FRUCTIFICATIO utrique frondis paginæ copiosè imposita, ubique etiam super eas sparsa, e *receptaculis* constans ovato-sphæricis, attamen paullum compressis, exiguis, frondi concoloribus homogeneisque, breviter pedunculatis, decem pluribusve fasciculatim ortis, singulis semina includentibus aliquot perquam minuta, rubra, angulosa, serie disposita duplice, sub epidermide : per lentem maximè augmentem videntur singula semina e tribus componi.

COLOR pulchrè purpureo-sanguineus, subdiaphanus ; *exsiccata* intensior.

SUBSTANTIA cartilaginea, tenax, per desiccationem cornea ; tota sub lente pulchrè reticulata, quasi per venas elevatas intensioris coloris in areolas concavas oblongas esset distincta, quod non minùs est in exsiccata quàm in madente videndum.

Frondem *F. botryocarpus* ramosam in descriptione dixi, neque aliter fieri potuit ; talem enim quivis inspiciens diceret : ut autem res se ita habeat dubito, suspicorque, ut verum fatear, plantam rectius simplicem esse dicendam, quippe quæ naturâ est indivisa, totaque ortu constat e folio unico oblongo, e quo posthac alia atque alia proliferâ ratione enascuntur. Hic crescendi modus fortè pendet e receptaculis effœtis in folia mutatis ; atque ita censuit vir nunquam sine desiderio nominandus, b. Mohrius, qui semper autumavit se certissima talis proprietatis indicia huic insita detexisse Fuco. Hoc igitur præcipuè nititur ad argumentum suum firmandum in dissertatione jam sæpe citatâ. Multa quoque in hac tradit de fructu, quem a reliquarum algarum marinarum abludentem existimat, capsulasque describit longitudinalitèr dissepimento centrali percursas, seminibus utrinque in cellulis discretis locatis. Tale aliquid ipse frustra microscopii ope et dissecando quæsi ; neque tamen idcirco negarem fidem viro quem expertus scio accuratissimum. Quin potius memet ipsum erravisse crederem. Admonitus sum aliquot abhinc annis a Mertensio, *F. botryocarpum* hunc nostrum esse Lamourouxii *Dictyopteris Justii* ; quam tamen pro synonymo citare non sustinui, cùm quia iconem* nondum viderim, tum quia hic *Fucus*, costæ prorsus experts, primo generis caractere eget. Lamourouxius quoque inter *Delesserias* suas hoc ipso sub nomine specifico recensuit ; fatens simul se, frustulo tantum jam viso, tali sententiæ instare nolle, sed potiùs de loco in systemate dubitare. Colore, formâ, habituque, quod aiunt, generali, *F. botryocarpus* sterilis *F. palmatum* primo aspectu refert. Cautiùs investiganti similitudo evanescit ; substantiaque iucrassata et structura reticulata toto cælo diversos arguunt. Fructu proximè ad *F. platycarpum* accedit, cui, deficientibus capsulis, nihil affine. Hornemanus, quantum scio, unicus hanc stirpem hactenus legit ; servaturque in suo Hafniæ phytophylacio exemplar maximum, cujus iconem a Mertensio optimo adumbratam hic per ejusdem benevolentiam exhibere conceditur.

a. a. a. <i>F. botryocarpus</i> , magn. nat.	
b. <i>frondis pars</i> , magn. auct.	4.
c. <i>altera pars ejusdem</i> , cum <i>receptaculis</i>	6.
d. <i>receptaculorum fasciculus</i>	5.
e. <i>receptaculum</i>	4.
f. <i>idem</i> , vi disruptum	4.
g. <i>receptaculum horizontaliter dissectum</i>	3.
h. <i>ejusdem portio</i>	2.
i. <i>semina</i>	1.

* *Journal Philom.* No. 20, Mai 1809, p. 332. tab. 6. f. A.

Fucus botryocarpus, frond flat, cartilaginous, nerveless, oblong, quite entire, proliferous from the margin and surface: receptacles ovato-spherical, compressed, standing on short peduncles, clustered, scattered over both sides of the frond.

Fucus ovifrons. MOHR, in *Beiträge*. I. p. 303.

Delesseria botryoides. LAMOUROUX, in *Ann. du Mus. d'Hist. Nat.* XX. p. 126.

At the Cape of Good Hope. *Horneman*.

Perennial?

ROOT, I have not yet seen.

FROND, half a foot long, (or perhaps considerably more, for I have never seen it entire) irregularly branched, with each branch resembling an oblong leaf, three or four inches long, flat, without veins or midrib, quite entire at the margin, rounded at the apex, and at the base narrowed into a very short compressed filiform stipes: from the margins of these, or sometimes from their flat surfaces, arise other leaves disposed without order, not very numerous, and like the primary ones, except that they are not more than the half or a third of their size.

FRUCTIFICATION, scattered in abundance over both sides of the frond, and confined to no particular part of them, consisting of *receptacles* in form between ovate and spherical, but slightly compressed, of the same color and substance as the frond, growing in bundles of ten or more from the same point, each supported on a short peduncle, and containing a few, very minute, red, angular seeds, placed immediately under the epidermis: these seeds through a high magnifier appear compound bodies, each consisting of three distinct round parts.

COLOR, a beautiful, deep, purplish red, semi-transparent; more deep in a dried state.

SUBSTANCE, cartilaginous and tough, approaching, when dry, to horny:—if examined by a strong microscope, the whole frond looks beautifully reticulated, and appears as if divided by a number of projecting veins of a deeper red into oblong concave areolæ; nor is this less visible in a dry than in a recent state.

In describing this *Fucus*, it has been impossible to speak of it otherwise than as having a branched frond; but at the same time I feel it right to own I very much doubt how far such a term can be with propriety applied to it. On the contrary, I entirely suspect that the plant originally consists of no more than a simple oblong leaf, and that all the subsequent modifications of its form arise only from a proliferous mode of increase, depending probably upon the elongation of the receptacles, after they have fulfilled the office primarily assigned to them. Such was particularly the opinion of my late lamented friend, Dr. Mohr, who regarded this plant as the most happy illustration of this mode of growth among the marine algæ, and has bestowed upon it particular attention in the paper quoted above, a paper to which I have frequently had occasion to express my obligations. He there also dwells considerably at length upon the fructification,* describing the capsules as divided longitudinally by a central dissepiment, and the seeds as placed in separate cells, nothing of which kind have I been able to discover. My own want of success would not lead me, however, to question his accuracy, which all who knew him knew to be extreme. Professor Mertens, some years since, informed me, that *F. botryocarpus* is Lamouroux' *Dictyopteris Justii*, but I have nevertheless not ventured upon quoting this as a synonym; as I have never seen his figure,† and our plant, by having no midrib, disagrees strikingly with the first of his characters of the genus, *Dictyopteris*. He has moreover certainly introduced it as a *Delesseria*; though acknowledging that he had seen only a fragment of it, and was far from satisfied as to its proper place in his system. The shape, color, and general appearance of *F. botryocarpus* might easily cause it, in a barren state, to be overlooked as *F. palmatus*: its substance, however, which is full twice as thick, and its reticulated struc-

* "Auf der Frons finden sich zerstreut auf beiden Seiten Häufchen von einer unendlichen Menge, sämmtlich aus einem Punct entspringender, geschlossener Pericarprien. Die Häufchen haben ein traubenförmiges Ansehn. Die einzelnen Pericarprien haben, nach einem untern stielartigen Theile, mehr oder minder einen eiförmigen Umriss. Sie sind dabei plattgedrückt. Schon die gute Linse bemerkt sie inwendig mit groben Puncten gezeichnet. Die verschiedenen Durschnitte unter dem Mikroskop untersucht, ergeben aber Folgendes. Mit den beiden flachen Wänden parallel, erstreckt sich durch die Mitte des Pericarpium eine Wand von einem Fasergewebe. Sie theilt mithin das Pericarpium in zwei gleiche Hälften. Von beiden Seiten der Scheidewand gehn senkrechte, und andre horizontale, die Senkrechten durchkreuzende, dünnere Wände nach der innern Fläche der beiden Aussenwände. Auf die Weise entsteht zu jeder Seite der grossen Scheidewand eine Lage kleiner, fast cubischer Zellen, deren das ganze Pericarpium (in zwei Lagen also), nach einer ungefähren Rechnung, über 200 enthalten mag. In jeder Zelle liegt, wie wir glauben wohl, kaum je mehr wie Ein dunkles irregulär spärliches Korn, das ohne Zweifel den Tang fortpflanzt."—*Beiträge zur Naturkunde*, I. p. 303.

† *Journal Philom.* No. 20, *Mai*, 1809, p. 332, *tab. 6. f. A.* I quote from the *Journal de Botanique*, II. p. 130. M. Lamouroux received his plant from the West Indies, and gives the following specific character: "Fronde ramosa, subfoliosa; foliis ovato-elongatis; fructificationibus raris, sparsis."



Fucus botryocarpus.

ture would prove it, even without the capsules, to be quite dissimilar. In its fruit it comes nearest to *F. platycarpus* of this work, an affinity which in the absence of fructification would scarcely be expected. Professor Horneman, I believe, is the only naturalist who ever found this plant; and it was from a specimen in his herbarium that the larger of my figures was copied by Professor Mertens.

a. a. a.	<i>F. botryocarpus</i> , natural size.								
b.	part of the frond, magnified	-	-	-	-	-	-	-	4.
c.	another portion, with fruit	-	-	-	-	-	-	-	6.
d.	cluster of receptacles	-	-	-	-	-	-	-	5.
e.	single receptacle	-	-	-	-	-	-	-	4.
f.	the same, torn open	-	-	-	-	-	-	-	4.
g.	horizontal section of a receptacle	-	-	-	-	-	-	-	3.
h.	portion of the same	-	-	-	-	-	-	-	2.
i.	seeds	-	-	-	-	-	-	-	1.

Fucus Peronii, stem flat, cartilaginous, linear, midribbed, leafy; leaves alternate, distichous, the lower pinnatifid, the rest simple, oblong and crenate; vesicles and receptacles axillary; the former spherical, supported on setaceous footstalks; the latter oblong and paniced.

On the Coast of New Holland. Péron.

Perennial.

ROOT, I have not yet seen.

FROND, a foot, or perhaps much more, in length, (for I have never seen it perfect), rising with a flat stem, whose width from base to summit is about equal to a line and a half, and every where nearly the same, furnished with a thin blackish midrib, and undivided, but bearing leaves, vesicles and fructification; leaves lining the whole length of the stem, distichous, alternate, separated from each other by intervals of about two lines each, the lower ones between horizontal and deflexed, and pinnatifid with eight or ten horizontal, lineari-oblong, narrow, alternate segments, the rest patent, simple, lanceolate, sessile, decurrent, midribbed, like the stem, their surface dotted, their margin, especially towards their apices, minutely and irregularly crenated; vesicles placed at the axillæ of the leaves, generally solitary, though growing occasionally two together, spherical, nearly of the size of the seeds of a sweet pea, supported on setaceous petioles not a line long, externally smooth, internally hollow and empty.

FRUCTIFICATION, growing, with the vesicles, from the axillæ of the leaves, consisting of small, lineari-oblong receptacles, disposed in a paniced manner, upon capillary flexuose peduncles, their surface slightly knobbed all over from the spherical, imbedded tubercles, each of which contains a few roundish, brown, seeds, not surrounded, as far as I have been able to discover, with any pellucid limbus.

COLOR, olive-brown, semitransparent, turning to a blackish brown when dry.

SUBSTANCE, cartilaginous, thickish towards the base.

The only specimen which I have yet seen of this *Fucus* was communicated to me by Professor Mertens, and was marked with the same specific name as is here given it, a name that I have retained no less out of respect to his wishes than in compliance with my own. The unfortunate naturalist whom it commemorates, has alone, as I believe, brought this plant at present to Europe. His specimens are preserved in the Royal Museum at the Jardin des Plantes at Paris; and, in the idea that it is probable they may be much superior to mine, I should scarcely have ventured upon describing the plant before I had seen them, were it not of a nature so far distinct from all others, that there can be no fear of a figure, though incomplete, affording room for confusion. It is evidently more closely allied to *F. decurrens*, than to any other known species; but even to this so little like, that a mere glance upon the description and figure of each will always suffice to distinguish them. The deflexed position of the lower leaves, a character peculiar, I believe, to the *Fuci* of New Holland, indicates an affinity that would scarcely be expected between *F. Peronii* and some other species from those shores, but particularly *F. decipiens*: the same leaves in this latter are also pinnatifid; and this is obviously the case in both, from a tendency to change into branches, in which respect it will be observed that our present plant by no means agrees with *F. diversifolius*, another *Fucus* of the same family, whose divided and simple leaves appear to be produced without any regularity about every part of its stem. As nothing more remains, I believe, to be said of the plant, I trust my readers will pardon me, if I employ the space that is left in a short outline of the life of M. Péron. He was born in the year 1775, at Cerilly, a small town in France, and was educated for the church; but entering into life at a time when the Revolution took possession of the minds of all men, he was induced, by the same ardor which afterwards displayed itself to such advantage in the promotion of science, to change his destination, and take up arms in defence of his country. Wounded in battle, and with the loss of an eye, he retired from the profession; but, equally unable to submit to a life of ease, applied himself now to the study of medicine, devoting himself day and night to anatomy, and finding infinite delight in the various branches of natural history. It chanced that, very soon after, the French government prepared the expedition, under the command of Captain Baudin, for the investigation of the coasts of New Holland. To this, learned men in every department were plentifully attached; and though the number was full, young Péron so recommended himself by his zeal, that he procured admission as a supernumerary. The hardships here encountered are before the public, who are also partly in possession of the profound researches and admirable observations upon natural history, and especially upon the *Mollusca*, by which in the course of the voyage he immortalized his name. He was one of the few who returned to Europe, and was selected to publish the account of the expedition, two volumes of which had already appeared, and a portion of the third was printed, when death hurried him from his pursuit, and his existence, in the year 1810, at the early age of 35.

a. *F. Peronii*, natural size.

b. lower part of the frond.



Fucus Peronii.



Fucus, caule plano, cartilagineo, lineari, costato, folioso; foliis alternis, distichis, inferioribus pinnatifidis, reliquis simplicibus, oblongis, crenulatis; vesiculis receptaculisque axillaribus; illis sphæricis, petiolatis, petiolis setaceis; his oblongis, paniculatis.

HABITAT in Novæ Hollandiæ oris. *Péron.*

Perennis.

RADIX mihi nondùm visa.

FRONS ad quantam excurrat longitudinem prorsus nescio, instructa *caule* plano, latitudinem lineæ vel sesquilineæ, a basi ad apicem ubique ferè eandem servante, costâ tenui nigricante percurso, indiviso, folioso, vesiculifero, fructiferoque; *folia* disticha, alterna, singula intervallis duarum circiter linearum sejuncta, inferiora horizontalitèr deflexa et pinnatifida, segmentis horizontalibus, lineari-oblongis, angustis, alternis, reliqua patentia, simplicia, lanceolata, sessilia, decurrentia, caulis instar, costata, superficie punctata, margine, præsertim apices versus, vagè et minutè crenata; *vesicula* foliorum ad alas ortæ, plerumque solitariæ, rarius binæ, sphæricæ, *Lathyri odorati* seminum ferè magnitudine, petiolis haud lineam longis, setaceis, fultæ, extrinsecus læves, intus cavæ et vacuæ.

FRUCTIFICATIO ad alas foliorum unâ cum vesiculis posita, e *receptaculis* constat exiguis, lineari-oblongis, paniculatis, pedunculo capillari, flexuoso; extrinsecus lenitèr torulosa sunt ob *tubercula* immersa, sphærica, quorum singula includunt semina aliquot subrotunda, fusca, limbo, quantum detegere potui, nullo pellucido cincta.

COLOR olivaceo-fuscus, subdiaphanus; *exsiccata* fusco-nigricans.

SUBSTANTIA cartilaginea, basin versus crassior.

Votis obsequens Mertensii, cui hunc Fucum debeo, descriptum exhibeo insignitum nomine b. Peronii, qui primus legit, et qui solus, quantum scio, in Europam tulit. Ipsius exemplaria in museo Horti Botanici Parisiensis servata, hoc forsitan meliora, nondùm vidi; quare, veritus ne plus æquo manca descriptio atque icon extarent, vix hîc admissem unico modò specimini confisus, nisi planta gauderet habitu tam proprio, ut nequaquàm cum cæteris commisceretur. *F. decurrenti* est maximè affinis, ab hoc autem nimis diversus ut opus sit recensere notas per quas discriminentur. Folia inferiora deflexa faciunt ut *F. Peronii* ad alios quosdam Novæ Hollandiæ Fucos naturâ non multùm conjunctos accedat, et præsertim *F. decipienti* congenerem arguant. De Peronio, cùm spatium sinit et res ipsa monet, pauca dicere liceat: dulcius certè nihil quàm monumeto viri Naturæ investigandæ unicè dediti et in eodem peritissimi flores aliquot qualescunque offundere. Natus hic est honestâ stirpe apud Cerilly, vicum in Galliâ, A. D. MDCCCLXXV. Ad officium sacerdotale primò designatus, mox, discordiis civilibus ingruentibus, ad rempublicam studio latus est, stipendiaque pro patriâ meruit. Vulnere autem accepto et uno inter pugnandum oculo amisso, armis depositis, sese ad medicinam, ad anatomiam, ad naturæ historiam colendam incredibili ferè ardore contulit. Sub idem tempus respublica Gallica duas naves quæ Australasiæ littora scrutarentur instruxerat. Undique confluit virorum doctorum caterva, et his se Peronius comitem addidit. Hoc in itinere nomen sibi immortale paravit, præcipuè inquirendo in Molluscas, de quibus summo ingenii acumine multa observavit, adjectis, ope amici Lesueur, pulcherrimis delineationibus. Patriæ demùm redditus, sociis ferè omnibus morbo amissis, nihil actum dum quid superesset agendum credidit, totusque se accinxit ad edendam itineris narrationem suasque simul de Historiâ Naturali observationes. Hiscæ occupato, cùm duo jam tomi exierant e prelo, cui tertius quoque erat subjectus, mors præmatura, A. D. MDCCCX, vitam simul laboresque clausit: Extraneus ignotusque hæc paucæ, honoris causâ, retuli; felix ut tanti talisque viri nomen

“ His saltem accumulem donis et fungar inani
“ Munere.”

- a. *F. Peronii*, magn. nat.
- b. *frondis pars inferior.*

Fucus Swartzii, stem coriaceous, flat; branches alternate, simple; leaves linear, serrated; vesicles elliptical, apiculated, supported on flat, leafy, midribbed petioli: receptacles oblong, disposed in racemi.

PLACE OF GROWTH unknown.

Perennial.

ROOT, I have not yet seen;

Nor can I say any thing positive as to the length of the FROND, but, from the specimen here figured, which seems only a branch, I should suppose this to be considerable; and there can be little risk in stating that this plant is furnished with a flat, filiform stem, beset with branches similar to itself, half a line or more wide, linear, flexuose, a foot long, and naked, except that they produce a series of smaller ones, which originate from their flat sides, not from their sharp edges, and are two or three inches long and horizontal, and support the leaves, vesicles, and fruit; leaves alternate, not so numerous but that there is room for a short interval between each, a line and a half wide, linear, furnished with a thin blackish midrib, rather blunt at the point, and at their margin serrulated with exceedingly minute scattered teeth, at their bases losing themselves in a short petiolus; in every branch the lowest leaf* considerably exceeds the rest, and is often two inches long, the rest are not half that length, and the uppermost not uncommonly quite entire at their margins; vesicles placed at the base of the leaves, though seldom more than two or three on a branch, about the size of the seeds of the *Tangier Pea*, elliptical, so pointed as almost to appear apiculate, but with the mucro formed of their own substance, and not of a leaf growing from them, at their bases gradually narrowing into a flat, foliaceous, midribbed petiolus, two lines long, and widening from its origin upwards, till where it is attached to the vesicle it is of equal diameter.

FRUCTIFICATION, extremely small, oblong, torulose receptacles, growing three or more together at the base of the leaves, collected into a sort of racemus; but respecting their internal structure or seeds it is impossible for me, from their imperfect state, to speak.

COLOR, olive-green, turning black from drying.

SUBSTANCE, cartilaginous and thin in the vesicles and leaves; in the branches approaching to coriaceous.

Of this *Fucus* also I have seen no other specimen than the one here figured, which was many years ago sent me by Dr. Olof Swartz, so well known in the botanical world as the author of the *Flora Indiæ Occidentalis*, &c. The description and the figure of the plant must hence necessarily be incomplete; but, as this specimen, like the subject of the preceding plate, fortunately contains such peculiarities as leave no doubt of the distinct nature of the species, I have felt it would be wrong to omit noticing it in this work, and I was also glad of an opportunity of naming it after a Naturalist, to whom the science of Botany is no less indebted in general than I am as an individual. Its leading characters will immediately be seen to consist in its flat stem, its linear serrated leaves, and its elliptical apiculated vesicles supported on foliaceous petioli. The first of these it shares with *F. graminifolius*, whose whole mode of growth, branches, vesicles, and substance, are very different: the second it has in common with *F. natans*, *F. bacciferus*, and *F. dentifolius*, all of them at once distinguishable by their spherical vesicles: in the form of these and of their petioli *F. Swartzii* agrees with no other *Fucus* of the tribe but *F. acinarius*, whose cylindrical stem, entire leaves, and coriaceous substance, will always keep them from being confounded. It is now little likely that any further opportunity will be afforded me, in the course of this work, of returning to the family of plants allied to *F. natans*, and formerly all confounded under that general name. I quit them with the more regret, from a feeling that I have by no means been able to illustrate them as I had expected, had wished, and had almost promised; but, if it please God to prolong my life, I hope I may one day or other renew the investigation under more favorable auspices. It is not only that "art is long, and life is short"; but, in treating of a subject like this, whose materials can only be casually procured through the kindness of friends, it is impossible for any one to flatter himself with having done what is complete. A variety of incidental circumstances have indeed protracted the finishing of this work far beyond what was anticipated, and much new information has consequently been acquired; but no length of time would have enabled me to terminate it as I wished, or to cease to request that it may never be regarded otherwise than as a sketch.

- a. *F. Swartzii*, natural size.
- b. part of a branch, magnified - - - - 6.
- c. receptacles - - - - - 4.

* One of these I have seen, as represented in the figure, forked; but whether this is natural to the plant or depended on a *lusus naturæ*, I have no means of deciding.



Fucus Swartzii.

Fucus, caule coriaceo, plano; ramis alternis, simplicibus; foliis linearibus, serratis; vesiculis ellipticis, mucronulatis, petiolatis; petiolis planis, foliaceis, uninervibus: receptaculis oblongis, sub-racemosis.

HABITAT

Perennis.

RADIX nondum a me visa.

Nec est quod de FRONDIS longitudine pro certo affirmare ausim; sed hæc, quantum colligere licet e specimine nostro, quod exhibere videtur unum modò ramum, verosimilitèr est magna, et satis certò dicere licet hanc speciem esse instructam *caule* plano, filiformi, *ramis* obsito sui similibus, semilineam et ultrà latis, linearibus, flexuosis, pedibus, et nudis, nisi quòd seriem ferant minorum, e lateribus planis non e marginibus ancipitibus ortorum, horizontalium, bi-tri-pollicarium, folia, vesiculas fructumque sustentantium; *folia* alterna, haud ita numerosa quin intervallum sit quantumvis breve inter singula, sesquilineam lata, linearia, nervo tenui nigricante percursa, obtusiuscula, margine minutissimè sparsim serrulato-dentata, basi in petiolum perbreve decurrentia; inferius quodvis in ramis maximum,* et sæpe duos pollices longum, reliqua duplo breviora, et summa non rarò integerrima; *vesiculæ* foliorum ad basin sitæ, vix tamen plures quàm duæ vel tres in singulis ramis, *Lathyri tingitani* seminum magnitudine, ellipticæ, ita acutæ ut minutè apiculatas dicas, mucronibus tamen ex ipsarum substantiâ non e folio adnato constantibus basi attenuatæ in petiolum planum, foliaceum, uninerve, duas lineas longum, e basi angustatâ sensim dilatatum, ut quâ vesiculæ jungitur hanc diametro ferè æquet.

FRUCTIFICATIO *receptacula* perquàm exigua, oblonga, torulosa foliis immixta, tria vel plura in racemi speciem congesta, sed de horum structurâ internâ aut de seminibus nihil est quod dicam, cùm omnia nimis incompleta sese obtulerint.

COLOR olivaceus, *exsiccatæ* nigrescens.

SUBSTANTIA *foliorum* et *vesicularum* cartilaginea, tenuis; *ramorum* sub-coriacea.

Eadem illa causa quæ impulit ut *Fucum Peronii* describere non recusarem, unico modò exemplari eique manco confisus, paritèr suadet ut idem facerem pro specie hîc depictâ; et si dignus sit Peronius cui planta nova pulchraque sacraetur, certè nemo negabit talem quoque deberi Swartzio honorem, memor quantum de re Botanicâ meruit unicus ille ferè Linnæi discipulus nunc superstes, idemque *Floræ Indiæ Occidentalis*, *Muscologiæ Suecicæ*, multorumque aliorum operum auctor. Clarius vix ullum in re herbariâ nunc extat nomen: de talibus autem taceo; amicus enim laudo, et amici laudes esse suspectas in proverbium cessit. Notas quæ hanc stirpem a congeneribus distinguunt nemo non facilè agnoscat, in caule plano, foliis linearibus serratis, vesiculisque ellipticis mucronulatis, singulis petiolo foliaceo insidentibus, sitas. Ex his prima cum *F. graminifolio*, stirpe quoad crescendi modum, ramos, vesiculas substantiamque quàm diversissimâ, *Fuco Swartzii* communis est; altera cum *F. natante*, *F. baccifero*, et *F. dentifolio*, cunctis per vesiculas sphericas, ut alia taceam, statim dignoscendis; tertia verò non nisi cum *F. acinario*, quocum, si caulis teres, folia integerrima, et substantia coriacea respiciantur, nullo modo est commiscendus. Hactenus de *Fuco Swartzii*: restat ut pauca de speciebus *F. natanti* congeneribus eodemque olim nomine confusis dicam. Ad metam jam appropinquat hoc opus; neque priusquam attingat, verisimile est suppeditas fore posthac occasiones, quibus ad hanc familiam illustrandam plura conferam. Nolens autem pudensque relinquo; neque voti compos, neque quod speraveram facto, neque servatâ fide, mihi soli, quod faustum est, datâ. Sin Deo Optimo Maximo visum sit hanc meam prolatare vitam, spero me olim ad hanc, Illo concedente, melioribus auspiciis reversurum familiam: nihil me unquam absterrebit ab indagatione algarum marinarum, quibus multas horas feliciter actas, quibus plurimas ex amicitiiis animo gratissimas debeo, et in quibus Summi Artificis dextram nunquam sine lætitiâ, admiratione, veneratione perspexi. Hoc tantum pro me ipso fari liceat. Quàm longa sit ars, quàm brevis vita, omnibus liquet. Hinc in Naturâ indagandâ quis sibi blandiri potest se non defecturum mortalem? Sed inter Fucos alia obstant. Plurimi marium profundorum, alii remotorum incolæ, non sunt nisi casu reperiendi. Plantas terrestres licet in locis natalibus visas, in hortis colas: hi rarò sunt adeundi, nullâ arte colendi: quinetiam formæ mutationibus sunt quàm maximè obnoxii. Prohibuerunt multa insperata, quædam infelicia, quominus finem huic operi intra tempus constitutum imponerem; favitque mora, amicorum benevolentia adjuvante, quòd errata quædam emendarem, desiderata supplerem. Imperfectissimum verò linquo, imperfectum relicturus, si ultra Methusælæ terminum produceretur vita.

- | | | | |
|------------------------------------|---|---|----|
| a. <i>F. Swartzii</i> , magn. nat. | | | |
| b. <i>rami pars</i> , magn. auct. | - | - | 6. |
| c. <i>receptacula</i> | - | - | 4. |

* Ex his unum bifurcum vidi; sed an hoc naturæ lusu, quod aiunt, evenerit, an stirpi sit proprium, aliis dijudicandum linquere cogor.

Fucus Abies Marina, frond cartilaginous, compressed, linear, irregularly dichotomous, serrato-dentate; teeth like spines, horizontal: tubercles solitary, imbedded at the base of the teeth.

Fucus Abies Marina. GMELIN, *Hist. Fuc.* t. 2. A. f. 1. (*ex icone.*)

On the Coast of Teneriffe. *Professor Mertens.*

Perennial.

ROOT, a small, callous disk.

FRONDS, numerous from the same base, from nine to twelve inches long, flexuose, not so thick as a crow's quill, and everywhere filiform, except that in old specimens they are somewhat swollen near the base: they first rise in the form of flat linear leaves, furnished with a thin blackish midrib and serrulated at both sides; but this is an appearance they soon lose, and growing thicker become compressed, or near the root cylindrical, the midrib in either case disappearing, though some traces of it are still occasionally here and there to be discerned, if held to a strong light; the frond is irregularly dichotomous with patent segments, most uncertain in point of length, but always shortest near the extremities: indeed it not unfrequently happens that, from the base upward, the frond is three or four inches long before it is at all forked: in the lower part too it often, either from accident or the force of the waves, loses the teeth, which otherwise line it from bottom to top, and which are distichous, horizontal, aculeiform, irregularly alternate, half a line long, and separated from each other by intervals of about a line: sometimes they grow in pairs.

FRUCTIFICATION, situated principally upon the upper branches, consisting of small, spherical *tubercles*, imbedded in the substance of the frond, solitary, each at the base of one of the teeth, and each containing numerous oblong, brown seeds, surrounded by a pellucid limbus, and mixed with a mass of extremely minute fibres.

COLOR, as far as I have seen, everywhere an olive-green, and brownish black when dry; but I have no doubt but the plant in this respect agrees with *F. ericoides*.

SUBSTANCE, cartilaginous, flexible, and tough.

In the description of *F. ericoides*, in a former volume of this work, mention has already been made of the present *Fucus*, evidently the plant designed by Gmelin in the figure above quoted, though it is equally evident that his description, intended to accompany this figure, was made from the Linnæan *F. granulatus*, with which it seems probable, from some of his references, that he has also, like almost every other Botanist, confounded appearances of *F. fasciculaceus*. This *Fucus* is known to me only by a few specimens; but all of these present from top to bottom the same uniform appearance as that which is here figured, excepting one which has a stem like *F. ericoides*. This, however, is so much injured that I am not even sure of its belonging to the same species; for no Botanist at all conversant with the study of the Marine Algæ, requires to be informed that in very many of them, and especially in the family to which this belongs, there needs not only perfect individuals, but specimens collected at different periods of growth to determine with correctness as to identity. Should it hereafter be proved, which I can scarcely think possible, that *F. Abies Marina* is not really a distinct species, the plant to which it will be joined can be no other than *F. ericoides*; and from this it appears to be sufficiently distinguished in a variety of essential particulars, as well as in its manner of growth. The leaves of *F. ericoides* are not toothed, neither are any of its shoots so, at any period; but they are beset with spines, which, though certainly of the same substance, are not decurrent so as to form a part of them; the fructification also is placed at the apices of the branches, which it changes into cylindrical pods; and vesicles, of which in *F. Abies Marina* there is no appearance, seldom fail to shew themselves in every specimen, though in some more abundantly than in others. Besides, as a native of our own coasts, even if we suppose the plant here figured to be a variety depending upon a warmer climate, it could not have happened but that some tendency to a similar conformation would have been seen, carefully as *F. ericoides* has been watched by many Naturalists, and especially by Mrs. Griffiths, who in industry and in acuteness of observation would yield to none.

- a. *F. Abies Marina*, natural size.
- b. branch, ditto.
- c. ditto, with fruit, ditto.
- d. part of the same, magnified - - 6.
- e. seeds and fibres - - - 1.



Fucus. Vicia. Marina.



Fucus, fronde cartilagineâ, compressâ, lineari, vagè dichotomâ, utrinque serrato-dentatâ; dentibus aculeiformibus, horizontalibus: tuberculis solitariis, dentium ad basin immersis.

Fucus Abies Marina. GMELIN, *Hist. Fuc.* t. 2. A. f. 1. (ex icone.)

HABITAT ad oras Insulæ Teneriffæ. D. Prof. Mertens.

Perennis.

RADIX callus exiguus, orbicularis.

FRONDES ex eâdem basi plurimæ, dodrantes, pedalesve, flexuosè erectæ, pennâ corvinâ tenuiores, et ubique filiformes, nisi quoddam in ætate provectoribus basi sint aliquantùm incrassatæ: primo ortu assurgunt formâ foliorum linearium, planorum, costâ tenui nigricante percursorum, et utrinque serrulorum, quam tamen citò deponunt figuram, crassioresque fiunt, costâque evanescente compressæ aut juxta radicem teretes: servatur quoque hæc ad apices usque forma, costæ tamen vestigiis hic illic si luci fortiori objiciantur detegendis: frondes vagè dichotomæ, segmentis patentibus, quoad longitudinem situmque incertissimis, dichotomiis autem apices versus numerosissimis, nec rarè ad trium et ultra pollicum altitudinem indivisæ assurgunt; in inferâ parte quoque, sit casu sitve maris æstu, dentes amittunt, quibus cæteroquin ubique sunt munitæ; et qui distichi sunt, horizontales, aculeiformes, vagè alterni, semilineam longi, et singuli sejuncti intervallo unius ferè lineæ: aliquandò etiam bini nascuntur.

FRUCTIFICATIO in ramis, præsertim superioribus, sita, e tuberculis constat exiguis, sphaericis, in ipsâ frondis substantiâ immersis, solitariis, dentium ad basin sitis, singulis includentibus semina plurima, oblonga, fusca, limbo pelliculo cincta, et immixta fibrarum minutissimarum congerie.

COLOR, quantum vidi, ubique olivaceus; *exsiccata* fusco-nigricans: idem verò verisimiliter in *recente* qui in *F. ericoide*.

SUBSTANTIA cartilaginea, lenta, tenax.

Si non prorsus ignotum hic offero lectoribus Fucum, at saltèm nondum descriptum, et qui dubiis adeò fuit huc usque vexatus ut gratior ex his depellendis quàm a novo quolibet edendo provenit voluptas. Dum in priore tomo *F. ericoide* tractarem, memoravi quoque hunc, cujus eximia est, quæ suprâ citatur, apud Gmelinum icon; dum mirâ quâdam hallucinatione, descriptio, huic iconi comes, ad *F. granulatum* Linnæanum pertinet, cui etiam, ut nihil errori desit, *F. faniculaceus* quodammodo commiscetur. Ut desinam autem errata, quæ in Gmelino rara sunt, vellicare, vertendum est ad plantam. Hæc nulli ferè Auctori inter Botanicos visa memoratave, per pauca modò adhuc mihi innotuit exemplaria. Visam præterire nemo possit: tantum a congeneribus omnibus crescendi modo recedit. Non enim, horum instar, caule assurgit crasso,* ramis obsito angustioribus, qui vicissim alios ferunt atque alios, utrâque serie præcedentibus minore, sed a basi usque ad apices crassitiem eandem immutatam servat. Quod si in hoc, cum humanum sit errare, humani aliquid sim passus, si pro distinctâ specie proponam varietatem, vel a solo, vel a cæli temperie, vel ab aquâ minùsve profundâ pendentem, nullus est, ut opinor, præter *F. ericoide*, inter Fucos hactenus descriptos, cui *F. Abies Marina* hic noster conjungi potest. Quæramus igitur quibus modis hi duo inter se congruunt, vel potiùs, nam facilius est, quibus discrepant. Transeo crescendi modum jam memoratum, ut de quo inutile est dicere. Alia sese offerunt discrimina. *F. ericoide* folia sunt integerrima et rami nullo ætatis stadio dentati: hi verò spinis homogeneis undequaque densè vestiti, et illa prorsus nuda. Fructus in eâdem stirpe ramorum est situs ad apices, qui idcirco in receptacula cylindracea mutantur: vesiculæ quoque, quæ *F. Abieti Marine* semper desunt, rarè sunt in *F. ericoide* exemplaribus incassum petendæ, copiosiores licet in his quàm in aliis proveniant. Postremò *F. ericoide* nostrorum est littorum incola, et quidem eorundem quâ D^{na} Griffiths habitat, quæ, uti jam sæpe sum testatus, tali ingenii acumine talique industriâ his plantis investigandis incubuit, qualis nullam inobservatam præteriret varietatem, observatam non legeret, lectam non servaret describeretque.

- | | | | | | |
|----|--------------------------|---------------------------|---|---|----|
| a. | <i>F. Abies Marina</i> , | magn. nat. | | | |
| b. | <i>ramus</i> . | | | | |
| c. | <i>alter ramus</i> , | <i>cum receptaculis</i> . | | | |
| d. | <i>ejusdem pars</i> , | magn. auct. | - | - | 6. |
| e. | <i>semina et fibræ</i> | | - | - | 1. |

* Inter exemplaria sub hoc nomine mecum a Mertensio communicata, unum fuit quod caule, *F. faniculacei* simili, est instructum; sed manum fuit, nec de quo aliquid certi sit dicendum.

Fucus barbatus, stem covered with elliptical knobs; branches filiform, repeatedly pinnated; spines few, scattered: tubercles collected into a solitary, lanceolate, terminal receptacle.

Fucus barbatus. Linn. Trans. III. p. 128. Syn. Fuc. I. p. 80. Ner. Brit. p. 83. t. 14. Fl. Fr. Ed. 2^a. II. p. 25. Eng. Bot. XXX. t. 2170. CLEMENTE. p. 310. LAMOUROUX, in Ann. du Mus. d'Hist. Nat. XX. p. 38. Enc. Méth. Bot. VIII. p. 376.

F. faniculaceus. GMELIN, Hist. Fuc. p. 86. t. 2. A. f. 2. (excl. syn. Linn.) Fl. Ang. p. 575. WITH. IV. p. 17. Fl. Atl. II. p. 424. WULFEN, in Jacq. Coll. I. p. 360. WULFEN, Crypt. Aquat. No. 21. (excl. syn. multis.) ROTH, Cat. Bot. II. p. 158. ESPER, Ic. Fuc. I. p. 67. t. 30. (excl. syn. multis.) Fl. Ped. II. p. 329?

F. crinitus. Fl. Atl. II. p. 425. Enc. Méth. Bot. VIII. p. 377.

F. marinus α. BARRELIER, Ic. t. 1290. f. 2.

β tubercles more loosely disposed, adjoining each other.

F. barbatus β. Syn. Fuc. I. p. 81.

F. granulatus. Linn. Trans. III. p. 131. (excl. syn.)

γ tubercles collected into an oblong blunt receptacle.

In Devonshire. Hudson.—Not rare, near Trieste. Wulfen.—By Cadiz. Clemente.—Coast of Barbary. Poiret.—Sicilian coast. Earl of Mountnorris.—About Nice. Mr. Risso.—β in the same places with α.—γ was gathered near Ceylon and sent to Linnæus by Thunberg.

Perennial.

ROOT, a flat, thick, hard disk, two lines or more in diameter.

FROND, above a foot long, rising with a cylindrical stipes, as thick as a goose-quill, about two inches long, undivided, and sometimes from top to bottom, sometimes only towards the summit, beset with branches, whose swollen bases occasionally only remain, and make the plant look like a trunk covered with oblong knobs; branches cylindrical, placed more or less close to each other, panicled, alternate, patent, not more than a fourth of the thickness of the stipes, filiform, and covered with a second series, which are also alternate and patent, stand about a line or a line and a half apart from each other, and are nearly an inch long, though gradually shorter, the nearer they are to the apices, so that the uppermost scarcely exceed two lines: these too, in their turns, are loosely clothed with others which bear the fructification, and are yet more short, capillary, disposed in the same manner, often variously twisted, and the ultimate ones forked: of vesicles in this species I have seen no appearance,* and seldom more than one or two scattered spines: leaves, too, as far as I have been able to discover, it has none; except indeed such a term may be applied to the early shoots, which are unquestionably compressed, but have no appearance of a midrib.

FRUCTIFICATION, placed at the tips of the branches, which swell into receptacles of the form of siliquæ, and resemble, if small things may be compared to large, the pods of radishes; they are a line and a half long, and tipped with a short setaceous mucro, which is occasionally so lengthened as to bear a second receptacle separated by but a short interval from the primary one; their surface is unequal all over from the tubercles they inclose: these are spherical, and contain a few oblong, brown seeds, surrounded by a pellucid limbus, and mixed with oblong pellucid bodies, of very much smaller size: among them I discovered no fibres, though I cannot doubt but such might have been found in the plant when recent: small, spherical, solitary, sessile tubercles may sometimes also be seen scattered over the branches, similar to those already mentioned under *F. ericoides*.

COLOR, black and opaque in the stipes; bright olive in the branches, but turning everywhere black when dry.

SUBSTANCE of the stipes hard and woody; of the rest of the frond cartilaginous and flexible.

The variety β is distinguished by having its tubercles in general not collected into a pod-shaped receptacle, but rather placed at short distances from each other, and often so far apart as to make the ends of the branches almost moniliform.

γ has its receptacles obtuse and truncated, instead of their ending in a mucro.

* I almost fear that this assertion is too strong; for in one specimen (but it is only one out of a great many) I certainly discover swellings placed beneath the fruit, of an appearance that is questionable between receptacles and vesicles; so as to seem as if the pods having performed their office turned into air-bladders, as different Botanists have suspected in other Fuci.



Fucus barbatus.

Obs. The extreme branches are not unfrequently twisted and in a measure frizzled.

The figure of this *Fucus* by Gmelin, at the same time that it represents only a single branch, is so characteristic as to take away all doubts as to the species: it was this which first occasioned the plant to be satisfactorily known, and this also has been the cause, that, among all the difficulties universally allowed to attend upon this tribe of Fuci, *F. barbatus* has been a rare instance of one that by practical botanists has seldom been confounded with others. Gmelin's description is also faithful in its details, and peculiarly happy in the remark, that the whole plant is collected into the form of a thyrsus; but, unfortunately, his having quoted the Linnæan *F. fœniculaceus* has given rise to errors in the synonymy, as well as to misapprehension on the part of those who have never seen his plates; and has rendered it necessary for the specific name to be altered by Dr. Goodenough and Mr. Woodward, to whom we are indebted for having been the first, that, by a careful investigation of the Herbarium of Linnæus, pointed out the differences between this plant and what he had intended as *F. fœniculaceus*. How far *F. barbatus* is really entitled to a place in the British Flora I own I entertain much doubt. I never saw a specimen gathered upon our shores; and in Devonshire, where Hudson is stated to have gathered it, I have been fortunate enough to enjoy the advantage of correspondents, who would have been little likely to have left it unnoticed. In the Mediterranean, on the contrary, I believe it to be common: the kindness of the Earl of Mountnorris has supplied me with it copiously from the shores of Sicily. It is a plant that does not seem liable to great changes of appearances in its different stages of growth. Even when destitute of fructification, the capillary frizzled shoots readily distinguish it; and in this state it has by Desfontaines been aptly denominated *F. crinitus*. Then also it bears at first sight considerable resemblance to *F. Brownii*, as in its general outline it does to another species from New Holland, *F. paniculatus*. But *F. granulatus* is assuredly the *Fucus* with which it is most liable to be confounded: with this it agrees in its knobbed stem; in the want of the broad leaves of *F. fœniculaceus*, and in the receptacles being generally placed singly. The two plants differ in the shape of their receptacles, and in the absence of spines and vesicles in *F. barbatus*. But all these points will be seen by the description above to be liable to some variation, though I have never found them so to much. At the same time therefore that I say I entirely believe these plants to be distinct, I should be sorry to be considered as pronouncing with that decision which leaves no room for a future change of sentiment: those only who can see them in their places of growth can be qualified absolutely to determine the point. In opposition to my sentiments on this head stand those of a sensible and well informed, though anonymous, writer in the *Allgemeine Litteratur Zeitung*, who, in a review of Wulfen's *Cryptogama Aquatica*, says that, from the author's original specimens in his own herbarium, it is plain that his *F. fœniculaceus* passes by age into his *F. concatenatus*, (*F. granulatus*), the receptacles changing into vesicles as they become empty; and that, consequently, Gmelin, under the name of *F. fœniculaceus*, has described and figured only the younger state of the same plant which he has afterwards described as his *F. Abies Marina*, and which is the true *F. concatenatus* of Wulfen and Hudson. The critique concludes with a remark that does credit to the sense and experience of the author; "But who shall decide among such difficulties?"

a. <i>F. barbatus</i> , natural size.				
b. extreme branch, magnified	-	-	-	6.
c. part of the same	-	-	-	5.
d. section of a receptacle	-	-	-	4.
e. tubercle	-	-	-	3.
f. seeds and pellucid vesicles	-	-	-	1.

Fucus, caule tuberibus nodoso; ramis filiformibus, decomposito-pinnatis; spinis raris: tuberculis in receptaculum solitarium, lanceolatum, terminale congestis.

Fucus barbatus. *Act. Soc. Linn.* III. p. 128. *Syn. Fuc.* I. p. 80. *Ner. Brit.* p. 83. t. 14. *Fl. Fr. Ed.* 2^{da}. II. p. 25. *Eng. Bot.* XXX. t. 2170 (non bona.) CLEMENTE. p. 310. LAMOUROUX, in *Ann. du Mus. d'Hist. Nat.* XX. p. 38. *Enc. Méth. Bot.* VIII. p. 376.

F. fœniculaceus. GMELIN, *Hist. Fuc.* p. 86. t. 2. A. f. 2. (excl. syn. Linn.) *Fl. Ang.* p. 575. WITH. IV. p. 17. *Fl. Atl.* II. p. 424. WULFEN, in *Jacq. Coll.* I. p. 360. WULFEN, *Crypt. Aquat.* No. 21. (excl. syn. plurimis.) ROTH, *Cat. Bot.* II. p. 158. ESPER, *Ic. Fuc.* I. p. 67. t. 30. (excl. syn. multis.) *Fl. Ped.* II. p. 329.?

F. crinitus. *Fl. Atl.* II. p. 425. *Enc. Méth. Bot.* VIII. p. 377.

F. marinus. α. BARRELIER, *Ic.* t. 1290. f. 2.

β. *granulatus*; tuberculis laxiùs dispositis, contiguis.

F. granulatus. *Act. Soc. Linn.* III. p. 131. (excl. syn.)

F. barbatus. β. *Syn. Fuc.* I. p. 81.

γ. *obtusus*; tuberculis in siliquam oblongam obtusam congestis.

HABITAT α in Devonîa. Hudson.—In Adriatico, ad Tergestum, non rarus. Wulfen.—Circa Portum Sanctæ Mariæ, prope Gades. Clemente.—Lybiæ ad oras. Poiret.—Siciliæ ad littora. Comes de Mountnorris.—Prope Niceam. D. Risso.—β in iisdem cum α locis.—γ in Mari Zeylonam alluente legit et cum Linnæo communicavit Thunberg.

Perennis.

RADIX callus explanatus, crassus, durus, diametro duarum et ultrà linearum.

FRONS pedalis et ultrà, instructa stipite terete, pennæ anserinæ crassitie, circitèr bipollicari, indiviso, nunc per totam longitudinem, nunc tantummodò juxta apices, obsito ramis, quorum bases incrassatæ, reliquâ parte per ætatem aut vim fluctuum deperditâ, sæpe persistunt, ut caulis tuberibus obsitus videatur: rami nunc approximati, nunc remotiusculi, teretes, paniculati, alterni, patentes, stipite quadruplo tenuiores, filiformes, ubique obsiti serie minorum alternorum, patentium, intervallis unius lineæ vel sesquilineæ sejunctorum, pollicem ferè longorum, sed quo magis ad apices appropinquant eo breviorum, ut summi vix duas lineas longitudine exuperent, omnium laxè vestitorum aliis brevioribus, capillaceis, simili modo dispositis, non rarò tortuosis, qui fructum ferunt, summis bifurcis: vesiculas in hac specie, qualiter in affinibus, nullas * vidi; nec, nisi rarissimè, unam alteramve spinam: folia etiam, quantum adhuc detegere potui, desunt, nisi quidem eo nomine sint appellandi primæ ætatis surculi, qui certè compressi, sed angustissimi, et costâ carent.

FRUCTIFICATIO sita ad apices ramorum tunc intumescantium in receptacula siliquiformia, (quæ, “ si parva licet componere magnis,” fructum *Raphani Raphanistri* non malè referunt,) lanceolata, sesquilineam longa, producta in mucronem brevem, setaceum, qui interdum ita producitur ut secundum ferat receptaculum brevi intervallo a primario disjunctum, superficie ubique ob tubercula inclusa torulosâ: in his dissectis semina conspiciuntur aliquot oblonga, fusca, limbo pellucido cincta, corpusculis oblongis, multoties minoribus, pellucidis immixta: fibræ tuberculis deerant, quas tamen recentibus adfuisse nemo dubitaret: aliquandò etiam alia tubercula exigua, solitaria, sphærica ramis sparsim insident, similia illorum jam antea sub *F. ericoide* memoratorum.

COLOR stipiti niger, opacus; ramis lætè olivaceus; exsiccata ubique niger.

SUBSTANTIA stipitis dura, lignosa, reliquæ frondis cartilaginea et lenta.

Var. β dignoscitur tuberculis laxiùs dispositis, et aliquandò subcatenatim monilis instar dispositis.

γ siliquas habet obtusas sine mucrone.

Obs. Crescendi modus in ultimis ramis variè tortilis.

* Anne hoc pro certo affirmandum? in uno exemplare video tumores infra fructum sitos, qui inter vesiculas et receptacula ambigunt, et in illas transire videntur.

Icon hujusce Fuci Gmeliniana ramum modò unicum eumque parvulum exhibet; stirpis tamen formam faciemque tam aptè repræsentat ut attentè intuenti nihil ferè desit ad plantam agnoscendam. Dum igitur reliqui ejusdem familiæ Fuci dubiis plùs minùs sunt vexati, dum per errores atque ambages diu palati sunt Botanici, nunc quærentes quibus limitibus singulæ terminarentur species, nunc quo nomine quamque ab auctoribus designatam autumarent, præbuit nobis *F. barbatus* rarum exemplum plantæ, de quâ, si extiterint scrupuli, saltem nullos extitisse necesse fuit. Vix minùs etiam aptè quàm icon quadrat ad hunc Fucum descriptio Gmelini, cùm in enumeratione partium felix, tùm in hoc felicissima, quòd plantam totam in thyrsum ferè coarctatam dicat. Gmelino igitur omnes jure confidunt, quatenus sibimet ipse confidit: in synonymis citandis hallucinatus est, ductusque Linnæi descriptionibus nimium brevibus credidit hanc stirpem ejus *F. fæniculaceum*, atque ita creditum appellavit. Confusio hinc orta est inter Botanicos, præsertimque inter illos qui non e plantis ipsis sed e libris cognitionem trahunt. Hanc primi diremerunt, herbario Linnæano inspecto, Goodenovius Woodwardiusque. An in Fucorum Britannicorum numerum recipiendus sit *F. barbatus* dubitari potest. In Devoniâ ab Hudsono lectum perhibet *Flora Anglica*: ego illinc nunquam recepi; neque tamen Hudsono fidem negare in remve in dubium vocarem, nisi exemplaria manca, quod expertus scio, facilè inter has stirpes deciperent. In Mari Mediterraneo copiosè provenit. Quatenus ex exemplaribus, quæ mihi multa fuerunt, exinde missis judicare licet, videtur *F. barbatus* in variis ætatis stadiis formâ non multùm ludere. Receptacula fructiferum, rami capillacei crispatis sterilem designant. Hinc aptè a Desfontainesio accepit *F. criniti* nomen. Inter sterilem et *Fucum Brownii* similitudinis quiddam interest: magis autem, præsertim si peripheria spectetur, *F. paniculatum* refert. Neque tamen cum his neque cum alio quopiam ex Australasiæ maribus fieri potest ut commisceatur. Nostratibus est magis affinis, et maximè *F. granulato*. Congruunt caule nodoso, absentia foliorum, qualia *F. fæniculaceus* habet prope basin, latorum, et quòd receptacula plerumque solitaria sint in ramis. Quibus discrepant hæc sunt; receptaculorum in utroque figura minimè eadem, nullæque in *F. barbato* spinæ vesiculæve, certissima *F. fæniculacei* notæ. Specie igitur satis diversas existimo; haud ita tamen ut de stirpe quam nondùm in loco natali vidi sententiæ impensius instarem. Descriptionem quoque nostram legenti liquebit eas quibus præcipuè nitor ad definiendos notas non prorsus mutationibus carere. Nec desunt inter Botanicos peritissimos qui secùs sentiunt. Rem igitur in medio relinquo litesque a posteris dijudicandas.

- | | | | | |
|---|---|---|---|----|
| a. <i>F. barbatus</i> , magn. nat. | | | | |
| b. <i>ramus, e summis</i> , magn. auct. | - | - | - | 6. |
| c. <i>ejusdem apex</i> | - | - | - | 5. |
| d. <i>receptaculum horizontalitèr dissectum</i> | - | - | - | 4. |
| e. <i>tuberculum</i> | - | - | - | 3. |
| f. <i>semina et corpuscula pellucida</i> | - | - | - | 1. |

Fucus granulatus, stem covered with elliptical knobs; branches filiform, repeatedly pinnated; spines numerous, scattered; vesicles elliptical, innate, moniliform: tubercles either scattered over the branches, or collected into a lineari-subulate, terminal receptacle.

Fucus granulatus. LINN. *Spec. Plant.* II. p. 1629. *Syst. Nat.* II. p. 717. *Syst. Plant.* IV. p. 572. *Syst. Nat. Ed. Gmel.* II. p. 1382. *Fl. Dan.* t. 591. *Fl. Norv.* II. p. 139. ESPER, *Ic. Fuc.* I. p. 119. t. 61? *Enc. Méth. Bot.* VIII. p. 377.

Fucus Abies Marina. GMELIN, *Hist. Fuc.* p. 83. *ex descript.* (excl. syn. plur.)

Fucus pinastroides. ESPER, *Ic. Fuc.* I. p. 146. t. 99. (excl. syn.)

Fucus aculeatus.* ESPER, *Ic. Fuc.* I. p. 72. t. 53?

β. *concatenatus*; vesicles elliptical, distinct, all arranged in a moniliform manner: tubercles collected into linear-acuminate receptacles.

Fucus concatenatus. LINN. *Sp. Pl.* II. p. 1628. *Syst. Nat.* II. p. 717. *Syst. Plant.* IV. p. 572. *Syst. Nat. Ed. Gmel.* II. p. 1382. *Fl. Ang.* p. 574. *Fl. Scot.* p. 923. WULFEN, in *Jacq. Coll.* I. p. 354. WULFEN, *Crypt. Aquat.* No. 26. CLEMENTE, p. 310. *Enc. Méth. Bot.* VIII. p. 376.

Fucus concatenatus, var. ESPER, *Ic. Fuc.* p. 164. t. 86.

γ. *mucronatus*; vesicles confluent, of no certain shape or size: receptacles long, linear and acuminate.

Fucus mucronatus. *Syn. Fuc.* I. p. 78. LAMOUROUX, in *Ann. du Mus. d'Hist. Nat.* XX. p. 38.

Fucus fœniculaceus. LINN. *Trans.* III. p. 134. (excl. syn. Linn.)

Fucus concatenatus. VELLE, *Pl. Mar.* t. 2. f. 1.

Fucus granulatus. *Eng. Bot.* XXXI. t. 2169.

Fucus nodicaulis. WITH. IV. p. 111.

Fucus racemosus. ESPER, *Ic. Fuc.* I. p. 141. t. 97.†

Fucus trinodis.‡ FORSKÅL, *Fl. Ægypt. Arab.* p. 192.

δ. *macrocarpus*; frond cylindrical; vesicles scattered and confluent, often quite wanting; spines very few; receptacles long.

In the Indian Ocean. LINNÆUS.—Coast of Sicily. EARL of Mountnorris.—Near Nice. M. RISSO.—β very common in the Adriatic. WULFEN.—Sent from the Red Sea to Sir Joseph Banks.—Near Cadiz, but scarce. CLEMENTE.—γ Coast of Devonshire and Cornwall. Mrs. Griffiths.—Bantry Bay. Miss Hutchins.—δ on the Cornish Coast. Mr. Rashleigh.

Perennial.—June.—October.

ROOT, a ligneous, black disk, frequently not exceeding one or two lines, but sometimes equalling half an inch in diameter.

FROND, rising with a cylindrical *stipes* about seven inches long and equal in thickness to a swan's quill, usually simple, but sometimes once or twice forked, beset all over with oblong knobs of the shape and size of the roots of *Poa bulbosa*, placed close to another, and of the same substance as the stem, each ending in a single branch; branches from seven inches to a foot or even more in length, cylindrical, filiform, scarcely thicker than packthread, sometimes pinnated with others which are shorter and irregularly alternate, and in their turns bear a third quite capillary series, but more commonly, especially when the plant is young, repeatedly dichotomous, with segments between erect and patent, of most uncertain length, number, and situation; about the branches, but particularly the upper ones, are to be found, scattered in greater or less profusion, very short, subulate, horizontal, incurved spines, sometimes growing upon the filiform part of the branches, sometimes upon the vesicles; vesicles seldom to be found but in the upper branches, from the swelling of which they are composed, small, lineari-elliptical, their surface often

* It was the magnified part of the frond in this figure that has induced me to refer it to *F. granulatus*: from the rest of the plate, and from the description, it is impossible to form any opinion of what was intended.

† Nobody who sees this plate will wonder that such a specimen, a mere stem without a single branch, should have misled a botanist who judged of marine plants only from herbaria.

‡ Under this name I have received *F. granulatus* var. β from Forskal's own herbarium; but I have also seen the *F. muricatus* of this work taken from the same place and called by the same name: it is impossible therefore to speak with certainty as to the plant intended.



Fucus granulatus.



tubercled, in some cases solitary, in others two or more joined like the links of a chain, often confluent:—such is the appearance of the full-grown perfect frond; that of the young one is very different; in this there is either no stipes, or it is cylindrical and smooth, and without the bulb-like excrescences; the branches originate direct from the root, and have the form of flat, very narrow, linear, midribbed leaves, quite entire at the margins, some simple, others pinnatifid, with the angles of the divisions slightly rounded; the whole plant resembling a bushy paniced shrub:—but this *Fucus* is also liable to many other changes in its appearance; some specimens so abound in vesicles that their upper part appears little more than a string of them, others wholly want them; and the vesicles themselves are either scattered and minute, or shapeless from their confluence, so as to be barely visible except on attentive observation, or they are so regular in form and size as to appear the effect of the most careful art, and are strung like the beads of a necklace: the spines are equally variable in number and situation, nor is there less diversity in the thickness of the branches: not uncommonly, too, may be found an old stem covered with its knobs, but having lost all its branches; such is the *F. racemosus* of Esper:—To this long description I will add but a few words more, to mention the most extraordinary specimens I ever saw, which were gathered by Mr. Sowerby and myself at Falmouth, in the summer of 1799. They were, apparently, full-grown, but the branches were scarcely at all divided, and all flat and linear, except that for about half an inch at their extremities they were covered with numerous, round tubercles, placed close to each other, mixed with a few spines.

FRUCTIFICATION, placed at the extremities of the branches, which then swell into oblong, acuminate *receptacles*, one or two lines long, formed of imbedded, spherical *tubercles*, each about the size of poppy-seeds, and each containing a few brown oblong *seeds* mixed with a number of pellucid bodies: these tubercles, however, are not always placed close to each other, but sometimes they lie scattered at short distances over the branches, making them look granulated, and hence the plant derives its appropriate name: this is more the case in Mediterranean specimens than in those from our seas.

COLOR, black in the stipes, in the branches a semitransparent olive-green, which, however, turns black from drying, but from subsequent immersion, or from being held against the light of a candle, appears a dark dull red.

SUBSTANCE, between coriaceous and woody, very tough, yet flexible, except in the stem, which is always hard and rigid: when dry, it is all brittle.

The *Variety* β has not only its upper branches, but those next to them, wholly composed of a row of elliptical vesicles, each in shape just like the other, and all arranged regularly like the beads of a necklace or the links of a chain, but with short intervals between them: it is thicker, and in all respects larger than α ; and the tubercles are never scattered, so as to give the summits a granulated appearance; but they are collected into receptacles two or three lines long.

In the *Variety* γ the appearance is very different from either of the preceding, owing to the irregularity in the shape of its vesicles, which are equally numerous as in β , but narrow and frequently confluent: the receptacles are long and acuminate.

The *Variety* δ is still more unlike α or β , but is connected with them by means of γ : it is often, as in the specimen here figured, wholly without vesicles; and when there are any they are few, and longer than in the others, and frequently confluent: the whole plant is cylindrical; and the primary branches often thicker than a goose-quill: the color is pale yellowish, and the receptacles still longer than those of γ , which they resemble in shape.

OBS. The stem of *F. granulatus* is generally covered with *F. fruticulosus* and a number of *Confervæ* and of the smaller *Zoophytes*, especially *Corallina rubens* and *Sertularia scruposa*, *reptans* and *eburnea*; on the branches are often to be found *Sertularia Pluma*, *lendigera* and *anguina*:—the property of reflecting bright, glaucous, prismatic tints, in the same manner as *F. ericoides*, though in a less degree, was observed long since in this plant by Miss Hutchins in Bantry Bay; but she remarked that *F. granulatus* once gathered never recovered this power, which the other regains on subsequent immersion.

Well aware of the difficulties that attend upon the investigation of *Fucus granulatus*, I have endeavoured, as far as lay in my power, to render my description of it copious and faithful. In the latter of these respects I hope I may have succeeded; but, with regard to the former, I find, with infinite regret, that nothing I could do would enable me to meet all the appearances of this marine Proteus. And yet, in the whole catalogue of Fuci, there are no two that require a greater, or perhaps an equal degree of care in the investigation and of nicety in the description as *F. granulatus* and *F. faniculaceus*: none more thoroughly perplex the botanists of the present day, or have more confused those of days that are past. Hence has arisen such an obscurity among their synonyms, as I have felt it would be

an equally useless and hopeless task to endeavour to clear up; and I have therefore preferred only quoting such as appeared to me free from doubt. Hence too it is impossible to treat of their history, on which subject little more can be done than to enumerate a few of the principal errors to which they have given birth. Among these the most striking is that of Gmelin, of whom it has already been more than once observed, that he has not only confounded the two plants in question, but, while he has described *F. fœniculaceus* under the name of *F. Abies Marina*, has figured, as the same, a plant entirely different. Linnæus, moving in an opposite direction, has made two different species out of *F. granulatus*, and by his herbarium increased the confusion. Dr. Goodenough and Mr. Woodward have thus been led into error. Mohr* has very curiously reversed the matter with regard to the figure and description in Gmelin; nor can I plead guiltless to the charge of mistakes on this subject in the *Synopsis of the British Fuci*. That the matter may now be considered as more clearly understood is almost wholly owing to Mrs. Griffiths, whose residence near the coast of Devonshire, the habitat as well of *F. fœniculaceus* as of *F. granulatus*, has enabled her during successive years to watch these plants in all seasons, and to trace them through all the stages of their growth. The following leading characters of each I have chiefly copied from her observations, and have added to them those of *F. barbatus*, hoping thus to make the matter so clear as to leave no room for doubt in future. Nor can I, while speaking of plants, for my knowledge of which I am almost entirely indebted to this lady, suffer to escape this fresh opportunity of expressing the numerous obligations which she has conferred upon this work.

F. granulatus; stem covered with tuberos knobs, its surface smooth; leaves linear, extremely narrow, entire at their margins; vesicles oblong; receptacles solitary, sessile, some beaded, from their granules lying distinct, others continuous and linear; spines scattered plentifully about the branches.

F. barbatus; stem covered with tuberos knobs, its surface smooth; leaves setaceous, curled; (vesicles wanting?) receptacles solitary, lanceolate; spines very few.

F. fœniculaceus; stem without knobs, rough all over; leaves broad, lineari-lanceolate, serrated; vesicles oblong; receptacles lanceolate, growing two or three together on short peduncles; spines none.

It only remains to be added that the true Linnæan *F. granulatus* is a more slender plant than the other varieties; that it is a native of the Mediterranean, but not, I believe, of our seas; and that it is, when properly expanded, elegant in its appearance; but in this respect it yields to the *F. concatenatus* of Linnæus, whose vesicles formed and arranged with equal regularity cause it always to be admired. The two last varieties have none of these claims to beauty, and are often so unlike the first that nothing but an intermediate series of specimens could have convinced me of their being really the same. The *F. moniliformis* of Esper, (II. p. 80. t. 148,) which he apprehends to be not distinct from *F. granulatus*, is in reality a fragment of *F. Brownii*, under which species it ought to have been quoted.

- | | | | | |
|---|---|---|---|----|
| a. <i>F. granulatus</i> , natural size. | | | | |
| b. young branch. | | | | |
| c. one of the upper branches, magnified | - | - | - | 6. |
| d. section of a receptacle | - | - | - | 3. |
| e. seeds and pellucid bodies | - | - | - | 1. |
| f. variety β , natural size. | | | | |
| g. variety δ . | | | | |
| h. one of the knobs of the stem. | | | | |
| i. section of the same, magnified | - | - | - | 6. |

* See Archiv. p. 134.

Fucus, caule tuberibus nodoso; ramis filiformibus, decomposito-pinnatis; spinis frequentibus, sparsis; vesiculis ellipticis, innatis, moniliformibus: tuberculis in receptaculum lineari-subulatum, terminale congestis, sparsisque.

Fucus granulatus. LINN. *Spec. Plant.* II. p. 1629. *Syst. Nat.* II. p. 717. *Syst. Plant.* IV. p. 572. *Syst. Nat. Ed. Gmel.* II. p. 1382. *Fl. Dan.* t. 591. *Fl. Norv.* II. p. 139. ESPER, *Ic. Fuc.* I. p. 119. t. 61? *Enc. Méth. Bot.* VIII. p. 377.

Fucus Abies Marina. GMELIN, *Hist. Fuc.* p. 83. *ex descript.* (excl. syn. plur.)

Fucus pinastroides. ESPER, *Ic. Fuc.* I. p. 146. t. 99. (excl. syn.)

Fucus aculeatus.* ESPER, *Ic. Fuc.* I. p. 72. t. 33?

β. *concatenatus*; vesiculis ellipticis, distinctis, monilis in formam concatenatis; tuberculis in receptacula lineari-acuminata approximatis.

Fucus concatenatus. LINN. *Sp. Pl.* II. p. 1628. *Syst. Nat.* II. p. 717. *Syst. Plant.* IV. p. 572. *Syst. Nat. Ed. Gmel.* II. p. 1382. *Fl. Ang.* p. 574. *Fl. Scot.* p. 923. WULFEN, in *Jacq. Coll.* I. p. 354. WULFEN, *Crypt. Aquat.* No. 26. CLEMENTE, p. 310. *Enc. Méth. Bot.* VIII. p. 376.

Fucus concatenatus, var. ESPER, *Ic. Fuc.* I. p. 164. t. 86.

γ. *mucronatus*; vesiculis confluentibus, difformibus; receptaculis elongatis, acuminatis.

Fucus mucronatus. Syn. *Fuc.* I. p. 78. LAMOUROUX, in *Ann. du Mus. d'Hist. Nat.* XX. p. 38.

Fucus fasciculaceus. Act. Soc. Linn. III. p. 134. (excl. syn. Linn.)

Fucus concatenatus. VELLE, *Pl. Mar.* t. 2. f. 1.

Fucus granulatus. Eng. Bot. XXXI. t. 2169.

Fucus nodicaulis. WITH. IV. p. 111.

Fucus racemosus. ESPER, *Ic. Fuc.* I. p. 141. f. 97.†

Fucus trinodis.‡ FORSKÅL, *Fl. Ægypt. Arab.* p. 192.

δ. *macrocarpus*; fronde terete; vesiculis sparsis confluentibusque, vel nullis; spinis subnullis; receptaculis elongatis.

HABITAT in Oceano Indico. Linnaeus.—Siciliæ ad oras. Comes de Mountnorris.—In Mari Mediterraneo, prope Niceam. D. Risso.—β in Mari Adriatico, frequentissimus. Wulfen.—E Mari Rubro accepit D. J. Banks, Baronet.—Prope Gades, sed rarus. Clemente.—In Cornubiæ et Devonix oris. D^{na}. Griffiths.—In sinu, Bantry Bay, dicto. D^{na}. Hutchins.—γ in Cornubiæ oris. D. Rashleigh.

Perennis.—Jun.—Oct.

RADIX callus lignosus, discoideus, nigricans, nunc vix unam alteramve lineam, nunc semipollicem diametro superans.

Frons instructa stipite subspithamæo, terete, pennæ olorinæ crassitie, plerumque simplice, sed interdum semel iterumve vagè bifurco, ubique obsito tuberibus homogeneis, oblongis, approximatis, *Poa bulbosa* radices formâ et mole referentibus, singulis ramo unico terminatis; rami spithamæi, vel dodrantales, vel etiam pedales, teretes, filiformes, vix filo emporetico crassiores, nunc aliis brevioribus, sub-alternis, ipsisque suâ vice tertiâ serie pinnatis, pinnati, nunc, quod quidem frequentius, præcipuè in juniore, evenit, iterum atque iterum sparsim dichotomi, segmentis erecto-patentibus, quoad longitudinem numerum situmque incertissimis; ramos, præsertim superiores, plus minus copiosè obsident spinæ perbreves, subulatæ, horizontales, incurvæ, sparsæ, remotæ, nunc ramorum parti filiformi nunc vesiculis impositæ; vesiculæ rarè nisi in summis ramis obviæ, ex ipsis conflatae, parvæ, sæpe tuberculatae, ellipticæ, hæ solitariae, illæ concatenatim connexæ, totumque aliquandò ramum occupantes, nec rarè alia in aliam

* Frondis ea pars in hac icone quæ lente aucta sistitur suadet ut hanc tabulam ad *F. granulatus* referam: de reliquâ, ut et de descriptione nihil certi est dicendum.

† Miretur nemo, qui hanc iconem vidit, ut tale exemplar, quale exhibet, ramis omninò denudatum, b. Esperum decepisset.

‡ Sub hoc nomine *F. granulatus* var. β ex herbario Forskålîi accepi; vidi autem inde decerptum et similiter nominatum *F. muricatum* nostrum. Quis de verâ stirpe judicabit?

confluentes.—Sic ferè evenit in plantâ adultâ et perfectâ; in juniore omnia diversa; stipes tunc nullus, aut brevis, et teres lævisque, et tuberibus carens; rami statim a radice orti, foliiformes, plani, angustissimi, lineares, costati, integerrimi, hi simplices, illi vagè pinnatifidi, angulis levitè rotundatis; tota stirps fruticulum densè cæspitosum, paniculatum refert:—sed variæ sunt insuper mutationes quibus hic Fucus est obnoxius;—vesiculis nunc abundat, ut suprâ totus ex illis constare videatur, nunc prorsus caret; hæ quoque nunc sunt sparsæ minutæque, aut figurâ deperditâ confluentes, ut vix nisi cautè intuenti dignoscantur, nunc monilis in formam ordine pulchrè concatenato disponuntur, et cum formâ, tum magnitudine, arte accuratissimâ elaboratæ videntur: spinæ paritèr numero situque variantur, neque minor est in crassitie ramorum diversitas; interdum quoque invenitur stipes tuberosus, ramis denudatus, qualis Esperî *F. racemosus*:—verbum unum modò ampliùs addam; in exemplaribus quibusdam, quæ undeviginti abhinc annis, D^{no}. Sowerbeio comitante, prope Falmouth legi, rami omnes sub-simplices, plani fuerunt, et lineares, nisi quòd apices per tubercula crebra imposita mutati in receptacula semipollicaria, spinâ unâ alterâve immixtâ, fecerunt ut tota stirps novam speciem simularet.

FRUCTIFICATIO sita ad apices ramorum tunc intumescens in *receptacula* oblonga, acuminata, unam alteramve lineam longa, e *tuberculis* constantia sphaericis, immersis, papaveris granorum magnitudine, singulis includentibus semina aliquot oblonga, fusca, unâ cum corpusculis plurimis pellucidis: talia verò tubercula nequaquam semper approximata et in receptaculum congesta jacent; sparsa sæpe sunt et remota, unde rami summi granulati apparent plantæque aptum nomen: hoc autem valdè frequentius est videre in exemplaribus e Mari Mediterraneo quàm in Borealibus nostris.

COLOR, qui stipiti niger, ramis est olivaceus et subdiaphanus; *exsiccata* totus niger absque nitore; *rursus* autem *madefacta* vel *luci fortiori objectæ* intensè rufo-fuscus.

SUBSTANTIA coriaceo-lignescens, tenacissima, leuta tamen et flexilis, nisi in stipite, qui semper durus est et rigidus; per desiccationem tota fragilis evadit.

Var. β ramos habet cum summos tum summis proximos totos constantes e vesicularum serie ellipticarum, sui invicem ad amussim similibus, catenæ vel monilis in modum connexarum, intervallo inter singulas perbrevis: crassior et in omnibus partibus major est quàm *α*; neque disponuntur tubercula unquam sparsim ut granulati sint apices, sed in receptaculum duas tresve lineas longum approximata coarctantur.

Varietati γ facies longè præcedentium dissimilis; nihil quoad formam certum; vesiculæ totidem quot in *β*, sed perangustæ et ubique ferè confluentes; et receptacula longa, acuminata.

In *var. δ* res longè alitèr se habet quàm in *α* aut *β*; tertia varietas stat quasi inter hanc et illas media; vesiculæ, ut in exemplare hic depicto, sæpe desunt; si adsint, sunt longiores quàm in reliquis, et plerumque hic illic confluentes; tota planta est teres; rami primarii pennâ anserinâ sæpe crassiores; color dilutè flavescens; et receptacula formâ referunt illa varietatis *γ*, longitudine exuperant.

OBS. Stipitem plerumque densè obsident *Fucus fruticulosus*, *Confervæque multæ*, ut et *Corallina rubens*, et *Sertularia scruposa*, *reptans*, *eburnea*, aliæque; ramos præcipuè perrepunt *Sertularia Pluma*, *lendigera* et *anguina*: versicolore hunc Fucum in sinu *Bantry Bay* observavit D^{na}. Hutchins, uti memoratur sub *F. ericoide*, qui tali proprietate evidentiùs et ubique gaudet.

Descripto jam *F. granulato*, quantum in me fuit ad plenum accuratèque, quod scripsi relego, dolensque agnosco descriptionem, neque perfectam, neque ullâ meâ arte talem futuram, qualis ad omnes hujus Fuci varietates quadret. Hæc enim et insequens tabula duos Fucos exhibent, rectè, si qui alii, Proteas vocandos, et magis quàm alii ferè omnes dubiis hactenus vexatos. Hæc autem ipsa res efficit ut de alterutrius historiâ inter priscos Botanicos nihil sit quod inquiramus: permiscuntur omnia, et nodos nemo solvet; nec, ut verum fatear, si quis solvere posset, operæ foret pretium. Hinc in synonymis citandis parcus fui, eaque modò protuli, quæ vel indubia videbantur, vel per descriptionem iconemve conferrent aliquid ad plantam dilucidius exponendam. Gmelinus ipse, uti jam suprâ sub *F. Abiete Marinâ* memoratur, bis et egregiè de hoc Fuco erravit: primùm unâ sub hoc nomine stirpe descriptâ aliâque adumbratâ, deinde *F. granulato* et *F. fasciculato* in descriptione commixtis. Erravit Linnæus, non modò quòd unam eandemque speciem in duas discerpserit, verùm etiam quòd in Herbario species reapse distinguendas conjunxerit. Erraverunt Goodenovius Woodwardusque. Erravit Mohrius,* rem, quoad Gmelini iconem descriptionemque, inverso ordine sistens; neque mirum si sapientiores doctioresque secutus ipse in *Fucorum Britannicorum Synopsi* me quoque errantium numero addidissem. Has tenebras demùm discussit D^{na}. Griffiths, de quâ nunc deinud liceat loqui cum summâ testificatione suorum in me officiorum; testaturus semper quantum illis debet

* Vide *Archiv für die systematische Naturgeschichte*. p. 134.

hic qualiscunque liber, "dum memor ipse mei, dum spiritus hos regit artus." Hæc, in Devoniâ commorata prope locum natalem *F. granulati* et *F. fæniculacei*, utrisque intentè observatis multos annos et singulis anni tempestatibus, notas insequentes designavit, per quas, ut spero, in posterum nullo negotio distinguantur. Adjeci quoque illas quæ *F. barbatus* discernunt; ut nihil, quantum in me est, desit, per quod hæ tres stirpes dijudicatu difficillimæ in omnibus ætatis suæ stadiis internoscantur.

F. granulatus; caule glabro, nodoso; foliis linearibus, angustissimis, integerrimis; vesiculis oblongis; receptaculis solitariis, sessilibus, granulatis, linearibusque; spinis sparsis, frequentibus.

F. barbatus; caule glabro, nodoso; foliis setaceis, crispis; (vesiculis nullis?) receptaculis solitariis, lanceolatis; spinis raris.

F. fæniculaceus; caule absque nodis, exasperato; foliis latis, serratis; vesiculis oblongis; receptaculis binis ternisve, lanceolatis, pedunculatis; spinis nullis.

Pauca modò adjicienda restant. Verus *F. granulatus* L. est longè tenuior reliquis varietatibus. Hic, Maris Mediterranei incola, nondum in nostris, quod scio, detectus est littoribus. Est etiam formâ elegans; sed elegantior adhuc est ejusdem auctoris *F. concatenatus*, propter vesicularum figuram dispositionemque constantè eandem. Similem sibi non asserunt honorem insequentes duæ varietates, quas tamen in *F. granulatum* transire multis exemplaribus edoctus scio, et quarum prima vesiculis confluentibus difformibus, altera vesicularum spinarumque paucitate, utraque mole majore, sese dignoscendam præstat. *F. moniliformis* Esperi, quem vir cl. specie ab *F. granulato* vix differre autumat, reapse nihil est aliud nisi *F. Brownii* frustulum, et sub hoc citari debuit.

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|--|---|---|----|
| a. <i>F. granulatus</i> , magn. nat. | | | |
| b. <i>ramus junior</i> . | | | |
| c. <i>ramus, e summis</i> , magn. auct. | - | - | 6. |
| d. <i>receptaculum horizontalitè dissectum</i> | - | - | 3. |
| e. <i>semina et corpuscula pellucida</i> | - | - | 1. |
| f. <i>var. β</i> , magn. nat. | | | |
| g. <i>var. γ</i> . | | | |
| h. <i>unum e caulis tuberibus</i> . | | | |
| i. <i>idem dissectum</i> , magn. auct. | - | - | 6. |

Fucus fœniculaceus, stem compressed, linear; leaves linear, acuminate, midribbed, and dotted; branches filiform, repeatedly pinnated; vesicles elliptical: receptacles growing two or three together, linear-lanceolate, pedunculate, terminal.

Fucus fœniculaceus. LINN. *Sp. Pl.* II. p. 1629. *Syst. Nat.* II. p. 717. *Syst. Plant.* IV. p. 571. (excl. syn. Gmel. et var. β .) *Syst. Nat. Ed. Gmel.* II. p. 1382. (excl. syn. Gmel.) *Fl. Norv.* II. p. 79.

β . *abrotanifolius*; stem smooth; vesicles widely elliptical.

Fucus abrotanifolius. LINN. *Sp. Pl.* II. p. 1629. *Syst. Nat.* II. p. 716. *Syst. Plant.* IV. p. 581. (excl. syn. Gmel.)* *Syst. Nat. Ed. Gmel.* II. p. 1385. (excl. syn. Gmel.) *Fl. Ang.* p. 575. *Act. Soc. Linn.* III. p. 126. *Ner. Brit.* p. 86. t. 14. *Syn. Fuc.* I. p. 66. *Fl. Lus.* p. 436. *Eng. Bot.* XXX. t. 2130. *Fl. Fr. Ed. 2^{da}.* II. p. 25. CLEMENTE. p. 309. LAMOUROUX, in *Ann. du Mus. d'Hist. Nat.* XX. p. 38. *Enc. Méth. Bot.* VIII. p. 377.

Fucus articulatus. FORSKÅL, *Fl. Ægypt. Arab.* p. 191.†

Fucus concatenatus. ESPER, *Ic. Fuc.* I. p. 161. t. 85, 87.‡

Abete marino di Teofrasto. GINANNI, *Op. Post.* I. p. 17. t. 15. N^o. 30.

γ . *discors*; frond everywhere flat; leaves wide, acuminate.

Fucus discors. LINN. *Syst. Nat.* II. p. 717. *Syst. Plant.* IV. p. 574. *Syst. Nat. Ed. Gmel.* II. p. 1384. *Fl. Norv.* II. p. 46. ESPER, *Ic. Fuc.* I. p. 59. t. 26. *Ner. Brit.* p. 108. t. 17. MICHELI, *Plant. Mar.* t. 23. f. 1. *Syn. Fuc.* I. p. 70. *Fl. Fr. Ed. 2^{da}.* II. p. 25. CLEMENTE. p. 309. ENG. BOT. XXX. t. 2131. LAMOUROUX, in *Ann. du Mus. d'Hist. Nat.* XX. p. 37. *Enc. Méth. Bot.* VIII. p. 378.

Fucus fimbriatus. *Fl. Atl.* II. p. 423. t. 259. *Fl. Fr. Ed. 2^{da}.* II. p. 33. CLEMENTE. p. 316. LAOUROUX, in *Ann. du Mus. d'Hist. Nat.* XX. p. 38. LAMOUROUX, *Ic. Fuc.* p. 70. t. 34, 35.

Fucus compressus. WULFEN, *Crypt. Aquat.* No. 27. ESPER, *Ic. Fuc.* I. p. 152. t. 77.

On the coast of England, in Dorsetshire, Devonshire, and Cornwall.—Plentiful at Sidmouth. *Mrs. Griffiths*.—Coast of France, on all sides. *Decandolle*.—In the Adriatic, but not common. *Wulfen*.—Sent from the Red Sea to Sir Joseph Banks.—Italian coast. *Michele*.—Shores of Norway. *Gunner*.—About Algeziras and Cadiz. *Clemente*.

Perennial. In the summer months.

ROOT, a hard, black, woody disk, an inch in diameter, inclining to conical in its upper surface.

FRONDS, sometimes solitary, sometimes rising two or three together from the same base, from a foot to two feet long, furnished with a slightly compressed *stipes* about a span long, of the thickness of a swan's quill, generally for one or two inches, and sometimes for as far as six inches, simple, and there either irregularly cleft into seven or eight branches, or continuing itself undivided, and having these branches disposed without order round it; *branches* from nine to eighteen inches in length, standing near each other, and of about equal height, compressed, as large at their origin as a small goose-quill, but at their extremities not thicker than packthread, undivided, naked immediately near their base, but afterwards beset with *secondary ones*, which are much smaller, between cylindrical and compressed, placed in a sub-distichous manner, mostly alternate, separated by intervals of from two to six lines, and growing in a direction between horizontal and patent; the lower ones are two or more inches long, the upper considerably shorter; the former are, like the primary branches, naked for a few lines from their base, and then pinnated with others still shorter and more narrow, compressed, alternate, distichous, between horizontal and patent, and sometimes producing a fourth series of still smaller; the upper are but simply pinnated; in these, and sometimes in the series immediately below them, are situated the *vesicles*, which are imbedded in the substance of the branches, seldom more than one or two in each, elliptical, little more than half the size of hemp seed, each terminated by a short, bristly, bipartite or tripartite ramulus, and not uncommonly producing one or two like it from its side; the whole frond, but particularly in the stipes and the primary branches, is rough all over with what appear the rudiments of abortive branches, which in the lowest part of the plant are almost a line long, but gradually decrease upwards, and in the ramuli appear only like black dots:—such is the appearance of the plant when perfect; but, even then, it generally happens that near the base are to be seen a few shoots looking more like leaves than branches, flat, obsoletely midribbed, scarcely half a line wide, and ending in a long, subulate point:—in its earliest stage *F. fœnicu-*

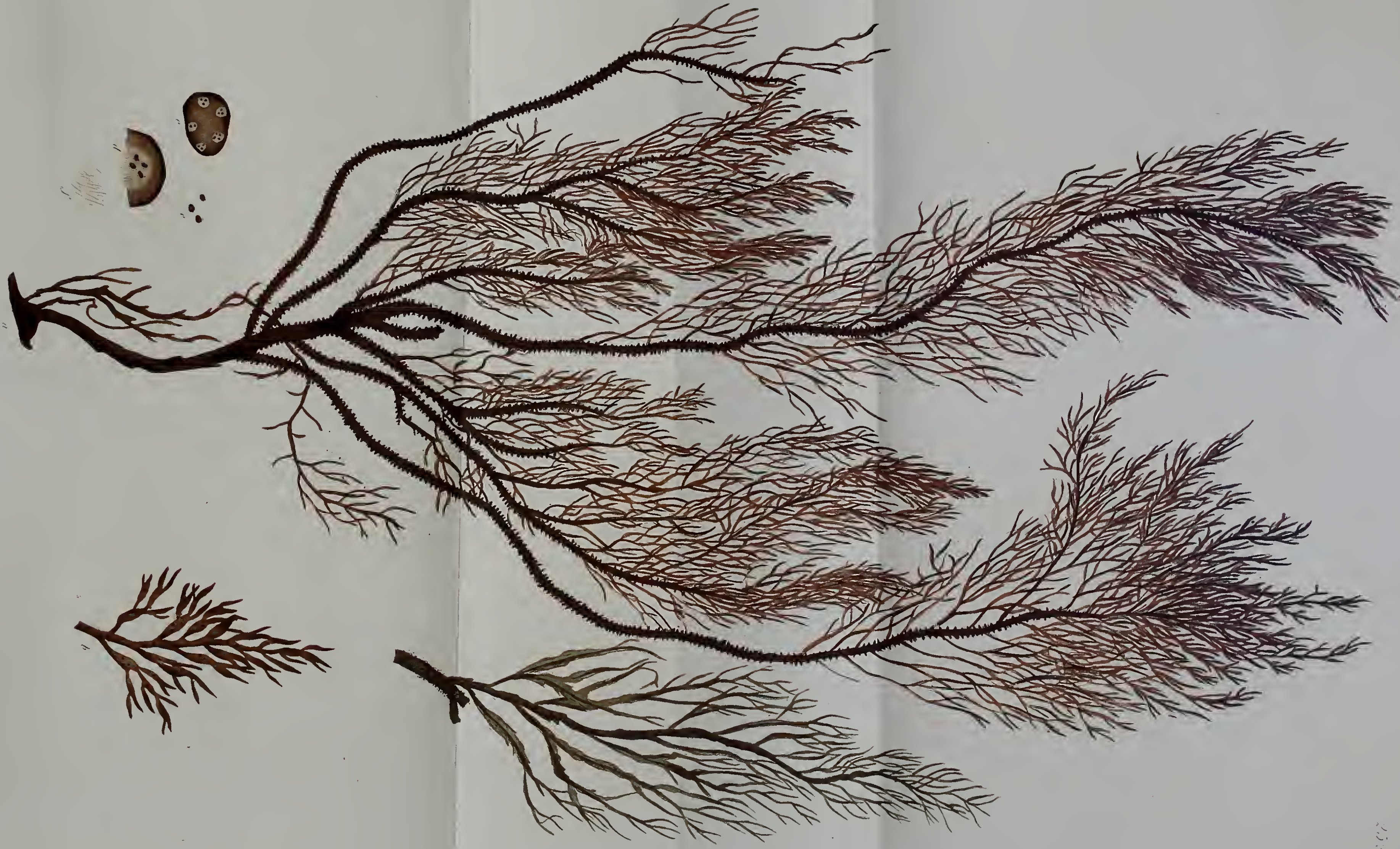
* Linnæus himself, in his *Mantissa*, p. 508, expressly directs this synonym, the *F. capensis* of Gmelin, to be added to *F. abrotanifolius*, whence almost endless errors have arisen: see what is said on this subject, under *F. cartilagineus*, in this work, II. p. 138.

† This synonym is quoted on the authority of Weber and Mohr, see *Archiv*, p. 134; but it must be considered rather doubtful, as they refer it not only to *F. fœniculaceus* L., but to *F. concatenatus* Wulf., which is the Linnæan *F. granulosus*.

‡ There is in Esper still a third plate named *F. concatenatus*, I. p. 111. t. 55, which I have not ventured upon quoting here: the specimen appears, from his figure, to be of a very extraordinary and doubtful character.

W. H. Bay's det.

Junonia pinnatifida



laceus exhibits a totally different appearance, and then wholly consists of yellowish, flat, thin *leaves*, a line and half wide, furnished with a black distinct midrib, dotted in their surface, irregularly serrated in their margins, some linear and simple, others lineari-subulate and repeatedly pinnatifid, with distant, patent, alternate segments, each series of which is more narrow than that below it.

FRUCTIFICATION, lineari-lanceolate *receptacles*, scarcely half a line long, growing on the ramuli that originate from the vesicles, but not entirely covering them, so that they always appear pedunculate; externally they are uneven, by reason of the imbedded spherical *tubercles*, each of which contains a few roundish, brown *seeds*, surrounded by a pellucid limbus and mixed with extremely minute white fibres.

COLOR, black in the stipes, olive-green in the branches, but with a yellowish tinge and semitransparent in the ramuli, vesicles, and leaves; when dry, it is all over blackish brown.

SUBSTANCE, hard and woody in the stipes, in other parts cartilaginous and flexible, yet tough; turning very rigid and brittle from drying.

The variety β wants the roughness in its stipes and lower parts, and has its vesicles twice as large as those of α : as far too as I have seen, it is destitute of the broad leaves towards the base.

The variety γ varies extremely with regard to its roughness: it sometimes has it very strikingly, in other cases it is quite free from all appearance of the kind: its leaves are all broad, and occasionally specimens may be met with, that have attained their full growth, and consist wholly of such leaves with the vesicles and receptacles growing out of them.

In describing the varieties of *F. granulatus*, it was possible to derive some degree of satisfaction from the feeling that what was thus described was easily to be understood, and was in a measure to be defined; that there were certain leading characters on which reliance might be placed; and that, however the plant might be subject to almost endless changes of form, still those which were enumerated seemed always to be the principal. With regard to *F. fœniculaceus* there is no room for similar self-congratulation; each shape passes into the other by gradations so imperceptible that no line can be drawn between them; and I owe it to my readers frankly to acknowledge, that, in separating it into distinct varieties, I have rather yielded to a feeling of weakness than followed the dictates of my judgment; fearing that, if I did otherwise, I might be accused of presumption or even of a worse motive, in refusing to find characters sufficient even for varieties, where other botanists have had no hesitation in laying down such as constitute species. With this avowal I quit the subject.* I must, however, observe that no man has been more bewildered respecting this plant, or probably has much more contributed to throw it into confusion, than I have in the *Synopsis of the British Fuci*. Respecting its history I have nothing to say, for the same reason as obliged me to be silent with regard to that of *F. granulatus*. Nor is it necessary to add any thing regarding its synonymy, further than that I believe that full reliance may be placed on those quoted above; that the *F. compressus* of Esper unquestionably belongs to *F. fœniculaceus*, notwithstanding its stem, as far as I have seen, or as far as I can gather from Wulfen's description, is always smooth; and that I should have had no doubt in also referring hither the *F. peucedanifolius* of Gmelin, did he not expressly say that it has no midrib.

- | | | | | | |
|----|--|---|---|---|----|
| a. | <i>F. fœniculaceus</i> , natural size. | | | | |
| b. | one of the upper branches, magnified | - | - | - | 6. |
| c. | section of a receptacle | - | - | - | 4. |
| d. | part of the same | - | - | - | 3. |
| e. | seeds | - | - | - | 1. |
| f. | fibres | - | - | - | 1. |

* As a most desirable addition to the history of this Fucus, I subjoin, what I am very happy to be enabled to do, the following extracts from letters from Mrs. Griffiths respecting it. . . . "In the summer of 1803, I found a plant growing in Torbay, in a deep pool of water, which I instantly recognized as *F. discors*: some time after, in a shallow pool nearer the shore, on Tor Abbey rocks, I found many specimens of your *F. abrotanifolius*. I had never seen the plant before, and on examining it and comparing it with the descriptions, I found it resembled *F. discors* in every respect but the smaller size of the parts: since that time I have had frequent opportunities of examining a great variety of specimens, from different parts of the coast, at different times of the year, and growing in various depths of water, and am fully convinced they must all be referred to the same species. They may be distinguished from every other plant of this family, by the fructification not being solitary or sessile on the vesicles; by the total absence of bulbs; by the stems and branches being compressed; and by the base of the branches being covered with a file-like roughness, composed of very short spines, which are continued more or less through the leading branches and the soft, succulent, young shoots that are to produce future branches; these also have a midrib, and are toothed and dotted. These strong and permanent characters sufficiently mark its separation from every other Fucus, and apply equally to the broad and narrow varieties of this. The plants which grow in deep water, and are seldom or never exposed by the tides, are *F. discors*, especially when found in summer, at which season they are extremely luxuriant, the leaves broad, the air-bladders large and full, the apices whose seeds are nearly ripe turgid: when fully ripe, the seeds are excluded from the pores, and surround the pods in a transparent mucus. In all plants found late in autumn or winter, as well as in those from shallow pools at every season, the leaves are more slender, and the parts of fructification smaller. In winter, when the seeds are scattered, the decaying parts fall off, but the branches continue to lengthen, and make vigorous shoots, and the whole plant increases in size and height; at the extremities the air-bladders may be seen, and soon after seeds become visible, and appear to be in a progressive state till the summer following. . . . The Linnæan *F. fœniculaceus* is undoubtedly the same plant, according to the specimens from his herbarium."

Fucus, caule compresso, lineari; foliis lineari-acuminatis, costatis, punctatis; ramis filiformibus, decomposito-pinnatis; vesiculis ellipticis: receptaculis binis ternisve, lineari-lanceolatis, pedunculatis, terminalibus.

Fucus faniculaceus. LINN. *Sp. Pl.* II. p. 1629. *Syst. Nat.* II. p. 717. *Syst. Plant.* IV. p. 571. (excl. syn. Gmel. et var. β .) *Syst. Nat. Ed. Gmel.* II. p. 1382. (excl. syn. Gmel.) *Fl. Norv.* II. p. 79.

β . *abrotanifolius*; stipite glabro; vesiculis lato-ellipticis.

Fucus abrotanifolius. LINN. *Sp. Pl.* II. p. 1629. *Syst. Nat.* II. p. 716. *Syst. Plant.* IV. p. 581. (excl. syn. Gmel.)* *Syst. Nat. Ed. Gmel.* II. p. 1385. (excl. syn. Gmel.) *Fl. Ang.* p. 575. *Linn. Trans.* III. p. 126. *Ner. Brit.* p. 86. t. 14. *Syn. Fuc.* I. p. 66. *Fl. Lus.* p. 436. *Eng. Bot.* XXX. t. 2130. *Fl. Fr. Ed. 2^a.* II. p. 25. CLEMENTE. p. 309. LAMOUROUX, in *Ann. du Mus. d'Hist. Nat.* XX. p. 38. *Enc. Méth. Bot.* VIII. p. 377.

Fucus articulatus. FORSKÅL, *Fl. Ægypt. Arab.* p. 191. †

Fucus concatenatus. ESPER, *Ic. Fuc.* I. p. 161. t. 85, 87. ‡

Abete marino di Teofrasto. GINANNI, *Op. Post.* I. p. 17. t. 15. No. 30.

γ . *discors*; fronde ubique planâ; foliis latis, acuminatis.

Fucus discors. LINN. *Syst. Nat.* II. p. 717. *Syst. Plant.* IV. p. 574. *Syst. Nat. Ed. Gmel.* II. p. 1384. *Fl. Norv.* II. p. 46. ESPER, *Ic. Fuc.* I. p. 59. t. 26. *Ner. Brit.* p. 108. t. 17. MICHELI, *Plant. Mar.* t. 23. f. 1. *Syn. Fuc.* I. p. 70. *Fl. Fr. Ed. 2^a.* II. p. 25. CLEMENTE. p. 309. *Eng. Bot.* XXX. p. 2131. LAMOUROUX, in *Ann. du Mus. d'Hist. Nat.* XX. p. 37. *Enc. Méth. Bot.* VIII. p. 378.

Fucus fimbriatus. *Fl. Atl.* II. p. 423. t. 259. *Fl. Fr. Ed. 2^a.* II. p. 33. CLEMENTE. p. 316. LAMOUROUX, in *Ann. du Mus. d'Hist. Nat.* XX. p. 38. LAMOUROUX, *Ic. Fuc.* p. 70. t. 34, 35.

Fucus compressus. WULFEN, *Crypt. Aquat.* No. 27. ESPER, *Ic. Fuc.* I. p. 152. t. 77.

HABITAT in Oceano. LINNÆUS.—In Dorsetiæ, Devonæ et Cornubiæ oris.—Copiosè apud Sidmouth. *D^{na} Griffiths*. —Galliæ ad oras. *Decandolle*.—In Mari Adriatico, haud tamen frequens. *Wulfen*.—E Mari Rubro accepit *D. J. Banks, Baronettus*.—Italiæ ad oras. *Michele*.—In Oceano Norvegico. *Gunner*.—Circa Algeciras et Gades. *Clemente*.— β et γ in iisdem cum α locis.

Perennis. Æstate fert fructum.

RADIX discus suprâ sub-conoideus, durus, ater, lignosus, diametro pollicaris.

FRONDES nunc solitariæ, nunc ex eâdem basi plurimæ, pedales, vel etiam bipedales, stipite instructæ teretiusculò, palmari dodrantalive, pennæ olorinæ crassitie, plerumque per pollicis unius alteriusve, aliquandò etiam et per sex pollicum, longitudinem simplice, ibique vel fisso absque normâ in septem octove ramos, vel iisdem vagè obsito, ipso indiviso; rami dodrantales, aut duplo longiores, approximati, subfastigiati, compressi, ortu pennam anserinam minorem crassitie æquant, apicibus passerinam non superantes, indivisi, basin versus nudi, inde obsiti *secundariis*, minoribus, e tereti compressis, sub-distichis, plerumque alternis, intervallo inter singulos nunc duarum nunc sex linearum, horizontaliter patulis, inferioribus duos et ultrâ pollices longis, summis brevioribus; illi quoque, primariorum instar, per duas tresve a basi lineas sunt nudi, suprâ aliis brevioribus angustioribusque, compressis, alternis, distichis, horizontaliter patulis, quartam aliquandò seriem minorum ferentibus, sunt pinnati; summi simpliciter modò pinnati evadunt: in his, et aliquandò in serie proximorum summis, reperiuntur *vesiculæ*, ex ipsâ ramorum substantiâ conflatæ, una aut rariùs duæ in singulis, ellipticæ, *Cannabis sativæ* seminibus dimidio ferè minores, ramulo brevi, setaceo, bi-tri-partito terminatæ, et interdum uno aut etiam altero simili, e lateribus orto, instructæ: frons tota, sed præsertim in stipite et ramis primariis, undique et ubique exasperata cernitur ramorum, ut videtur, rudimentis abortivis, horizontalibus, frequentibus, quæ infrâ sunt ferè lineam longa, crassaque et dura, sursum versus sensim descreunt, et in ramulis punctum modò atrum referunt.—Ita ferè planta in statu perfecto conspicitur, sed plerumque vel tunc basin versus reperiuntur quidam rami foliiformes, vix autem semilineam lati, plani, obsolete costati, integerrimi, in acumen longum subulatum producti:—primo ortu *F. faniculaceus* exhibet faciem prorsus alienam, constans totus e foliis lutescentibus, planis, tenui-

* LINNÆUS ipse, in *Mantissâ*, p. 503, jusserrat hoc synonymon, *F. capensem*, *F. abrotanifolio* adjici; sed indubiò erravit: confer quæ de hac rê jam dicta sunt in hoc opere sub *F. cartilagineo*, II. p. 138.

† Citatur hoc synonymon fide Weberi et Mohrii, in *Archiv.* p. 134, sed quodammodò dubium est; cum simul *F. faniculaceo*, Linn. et *F. concatenato*, Wulf. (qui *F. granulosus*,) Linn. apponendum velint.

‡ Non sustinui huc referre alteram Esperii tabulam, I. p. 111. t. 55, quam etiam *F. concatenatum* nominat, cum prorsus nesciam quid sistat: exemplar dissimile est omnibus, quos adhuc vidi, Fucis.

bus, sesquilineam latis, costatis, superficie punctatis, margine enormitèr serrato-incisis, his linearibus, simplicibus, illis lineari-subulatis, repetito-pinnatifidis, utrâque segmentorum serie præcedentibus angustiore.

FRUCTIFICATIO *receptacula* exigua, lineari-lanceolata, vix semilineam longa, imposita ramulis ortis e vesiculis, nec tamen totos occupantia, ut semper pedunculata videantur, extrinsecus lenitèr torulosa, ob *tubercula* immersa, sphærica, poro minutissimo pertusa, et includentia aliquot *semina* subrotunda, fusca, limbo pellucido cincta, quibus fibræ albæ minutissimæ immiscentur.

COLOR stipitis niger, ramorum olivaceus, ramulorum foliorum vesicularumque olivaceo-flavescens et subdiaphanus; *exsiccata* fusco-nigricans.

SUBSTANTIA, quæ stipiti lignea et dura, in ramis cartilaginea est lentaque, attamen tenax; *per desiccationem* ubique rigida et fragilis evadit.

Varietas β caule gaudet lævi vesiculisque duplo majoribus quàm quæ sunt α ; caret quoque, quantum ego vidi, foliis ad basin latis.

Varietas γ prædita est caule ramisque, plerumque, nec tamen semper, sicut α , exasperatis; sed folia habet omnia lata, etiam quum in perfectam excreverit longitudinem, et sæpe ex his tota constat, vesiculis receptaculisque horum apici in-sidentibus.

Aliorum auctoritati non meæ ipsius sententiæ obtemperans, hunc Fucum in tres varietates dispescui, veritus ne, si alitèr fecissem, vanitatis aut etiam obtreactionis arguerer, qui, mihi plus æquo confusus, notas quæ varietates distinguerent adesse negarem stirpibus quas alii pro speciebus distinctis venditare non dubitaverunt. Rectè necne fecissem dijudicent alii: hoc tantum pro me fari liceat. Re quàm attentè potui perpensâ, auctorum descriptionibus summâ quæ in me est curâ perlectis, plurimisque exemplaribus collatis, omnes *F. fæniculacei*, quantumvis inter se discrepantes, formæ alligantur per nexus certissimos, neque tamen oculo percipiendos neque ullâ verborum arte definiendos. Limites non dantur. In *F. granulato* autem res longè alitèr se habet: stirps quidem neque paucioribus neque minùs insolitis mutationibus est obnoxia; sed inter mutationes dantur gradus quibus insistere licet; talibusque ad varietates definiendas niti sum conatus. Inter Botanicos priscos vix aut ne vix unus est qui de hoc Fuco non erravit: ipse certè non minùs quam reliqui, fortasse etiam plùs, in *Fucorum Britannicorum Synopsi*, ad hallucinationes firmandas augendasque contuli. Nihil est igitur de stirpis historiâ pro certo dicendum; neque, quantum scio, necesse est ut aliquid de synonymis adjiciatur. Cùm tamen alibi *F. compressum* Esperi specie a *F. discorde* distinctum pronuntiaverim, liceat hìc agnoscere talem pro falsâ sententiam. Hoc exemplaria ab ipso auctore communicata edocuerunt; neque obstat quòd his omnibus caulis fuerit glaber, et quòd talem descriptio Wulfeniana exhibeat. Gmelini *F. peucedanifolium* in synonymorum numerum recipere non sum ausus. Prohibuit costæ absentia; alitèr indubiò recepissem.

a. <i>F. fæniculaceus</i> , magn. nat.					
b. <i>ramus</i> , e <i>summis</i> , magn. auct.	-	-	-	-	6.
c. <i>receptaculum horizontalitèr dissectum</i>	-	-	-	-	4.
d. <i>ejusdem portio</i>	-	-	-	-	3.
e. <i>semina</i>	-	-	-	-	1.
f. <i>fibræ</i>	-	-	-	-	4.



Fucus Risoanus.



Fucus, fronde membranaceo-gelatinosâ, planâ, enervi, lineari-cuneiformi, sub-spirali, marginibus sinuato-lobatis, denticulatis; dentibus minutissimis, ternis: capsulis sphaericis, sessilibus, in superficie sparsis.

HABITAT ad Niceæ oras. *D. Risso*.—Ad littora Maris Mediterranei. *D. Marryat*.

Annua?

RADIX callus perpusillus, explanatus.

FRONDES ex eâdem basi multæ, duas tresve pollices altæ, elongato-cuneiformes, scilicet ortu teretiusculæ et pennæ passerinæ crassitie, qualem formam vix ad unius lineæ altitudinem servant; exinde sunt compressæ, et ferè statim planæ fiunt, latitudine quo altiùs assurgunt eo sensum augente, donec prope apices pollicem ferè æquat, costæ venarumve vestigium nullum in fronde, quæ tota spiralitèr torta evadit, apicibus truncatis, attamen hîc sicut ubique alias ad margines, sinuato-lobatis, lobis approximatis, linearibus, his obtusis, illis acutis, his vix semilineam, illis duas et ultra lineas longis, omnibus minutissimè denticulato-crenatis, dentibus ternis quaternisve, qui, per lentem aucti, *Bæomycidis uncialis* apices steriles haud ita malè referunt.

FRUCTIFICATIO tubercula sphaerica, aciculæ minimæ capite minora, intensè purpurea, sessilia, utrique frondis paginæ ubique copiosè imposita, per apicem in maturis pertusum effundentia congeriem seminum lætè purpurascantium, minutissimorum, oblongorum, neque tamen omnium certâ figurâ donatorum.

COLOR intensè fuscus, purpurascente rubroque perfusus, et si diu in aquâ dulci retineatur, primò in dilutè purpurascentem mox in sordidè virescentem evanidus, subdiaphanus: *exsiccata* longè intensior et castaneus.

SUBSTANTIA membranacea, tenera et subgelatinosa; per desiccationem cornea.

Multi jam anni sunt elapsi ex quo primùm cognitus mihi est hic *Fucus*, sed non nisi per delineationem, quam *Mertensius* de more benignè miserat. Hanc in superiore hujus tabulæ parte sculpendam curavi. Optima certè est, et quæ cùm ad stirpem agnoscendam, tum ad speciem distinctam designandam satis valet. Neque tamen, fructu prorsus deficiente nullisque adhuc exemplaribus visis, plantam in hoc opere describendam autumavi; sed potiùs opperiri volui. Occasionem diu exoptatam volvenda dies tandem attulit, neque unâ modò ex parte. Anno enim præterito exemplaria prope Niceam lecta communicavit *D. Risso*, immixta compluribus aliis *Fucis* eorundem littorum incolis. Mox *Mertensius* a *Lamoureaux* acceptum misit;* et demùm fructiferum possideo, quod debeo liberalitati *Dⁿⁱ. Marryat*, navis regiæ Britannicæ Præfecti, qui, in Mari Mediterraneo commoratus, tempus atque studium, quantum per munus constitutum licuit, hisce plantis colligendis investigandisque impendit. Hujus quoque exemplaribus subscripta est *Ulva Rissoa*, sed an titulus ab ipso sit datus an ex auctore aliquo depromptus non liquet. Indicium autem secutus cupidè arripio occasionem insigniendi pulchram stirpem nomine viri optimè de Historiâ Naturali meriti, cùm per investigationes iteratas eorum quæ Mare Mediterraneum includit, tum præcipuè per opus nuper editum quo *Crustacea* prope Niceam detecta illustravit. De *F. Rissoano* nostro, quantum ego detegere potui, nulla fit inter Auctores Botánicos mentio; neque equidem ego unquam exemplaria in *Phytophylacio* quopiam vidi. Hinc infrequentèr reperiri suspicor. Madentis facies haud absimilis est *F. lacerato*; et paritèr ad alterutrum quadraret *F. indivisifolii* nomen, quod huic stirpi olim *Lightfootius* indidit. Sin naturâ affines quærantur, quærenti sese offerent *F. Radula* aut *F. erinaceus*, quibus *F. Rissoanus* est magis cognatus. Maximè autem inter omnes *Fuco Bangii*, speciei novæ in novo quodam *Flora Danica* fasciculo† nuper evulgatæ, sed plantæ minori, cui frons linearis, marginibus tam profundè lobatis ut runcinati ferè evadant. Huic fuco fructus nondùm est detectus: *F. Rissoani* capsulæ sphaericæ, centro perforato depresso, *Verrucariarum* tubercula referunt.

a. a. a. a.	<i>F. Rissoanus, diversis ætatis stadiis</i> , magn. nat.				
b.	<i>frondis fructiferæ pars</i> , magn. auct.	-	-	-	6.
c.	<i>eadem horizontalitèr dissecta</i>	-	-	-	5.
d.	<i>tuberculum dissectum</i>	-	-	-	4.
e.	<i>semina</i>	-	-	-	1.
f.	<i>frondis margo</i>	-	-	-	6.

* *Lamoureaux* misit, adjecto nomine *Mammillæræ ciliatæ*, *Spec. Nov. Ined.*; sed nullum tale nomen in *Novâ* suâ *Thalassiphytorum distributione* reperiendum est, neque descriptionem huic stirpi respondentem ibi deprehendo.

† *Tab. 1477.*

Fucus lividus, frond between cartilaginous and gelatinous, subcylindrical at the base, compressed, nerveless, bipinnate; pinnæ irregularly alternate, between patent and divaricated, lineari-lanceolate: capsules spherical, marginal, half immersed.

In the Southern Ocean. *Mr. Menzies*.

Annual?

ROOT, a small, blackish, callous disk.

FROND, from three to six inches long, between compressed and flat, without veins or midrib, its *primary shoot* an inch or two inches high, barely a line wide, and linear, except near the base, where it is subcylindrical, and not thicker than a sparrow's quill, in some cases undivided, in others forked, beset on both sides with *secondary branches*, which are twice its length, horizontal, or slightly recurved, scattered, separated from each other by intervals of two or three lines, subcylindrical and narrow at their origin, thence gradually, but very slowly, flattening and widening, which, however, varies in different individuals, so that their form is long lineari-lanceolate; their apices are acuminate and slightly incurved, their greatest width about three lines; the margin of all these branches in their subcylindrical part near the base is naked; but, excepting there, it is fringed with a row of smaller ones, which are in shape between linear and oblong, slightly attenuated at either extremity, rather blunt at the points, entire at the margins, patent, separated by short intervals, generally simple, but occasionally producing others yet smaller, growing in the same manner; the lowest are the longest, and frequently an inch in length, the others gradually shorten as they approach the extremity of the frond.

FRUCTIFICATION, spherical *capsules*, about the size of poppy-seed, growing, half imbedded, on the margins of the extreme branches, one only on each, including a globular mass of exceedingly minute, bright red, roundish seeds; but this does not occupy more than a third part of the capsule, the remainder of which is composed of parallel fibres diverging from the centre to the extremities, and so minute that the highest power of the microscope is insufficient to discover their individual form and structure.

COLOR, purplish, tinged with livid and brown, semi-transparent; soon changing, from exposure to the sun or from being kept in fresh water, to yellowish or a dirty white.

SUBSTANCE, between fleshy and gelatinous, thick, tender; thin and horny when dry.

OBS. In drying, it adheres to paper: a section of the frond shews the interior to be full of exceedingly slender, loose fibres.

It is scarcely easy to determine which is the *Fucus* that the present may most justly be compared to. Its nature, substance, and fructification point out *F. Radula*, *F. stiriatus*, and the rest of this semi-gelatinous tribe, as its nearest affinities, and with these it must undoubtedly be arranged in any future division of the family. But there is no one among them that *F. lividus* at all resembles in its form; and in this respect it comes nearest to *F. Teedii*, a plant in substance altogether different. I never saw any specimens of *F. lividus*, excepting those for which I am indebted to Mr. Menzies.

a. <i>F. lividus</i> , natural size.					
b. one of the extreme branches, magnified	-	-	-	-	6.
c. section of a tubercle	-	-	-	-	5.
d. contents of the same	-	-	-	-	4.
e. seeds	-	-	-	-	1.
f. section of the frond, to shew the internal fibres	-	-	-	-	3.



Fucus viridis.



Fucus, fronde cartilagineo-gelatinosâ, basi teretiusculâ, compressâ, enervi, vagè alternatim bipinnatâ; pinnis patentidivariatis, lineari-lanceolatis: capsulis sphæricis, marginalibus, semi-immersis.

HABITAT in Oceano Australi. *D. Menzies.*

Annua?

RADIX callus exiguus, discoideus, nigricans.

FRONS tri-sex-pollicaris, compresso-plana, nervi venarumque expers, ramo primario pollicem unum alterumve alto, vix aut ne vix lineam lato, lineari, nisi quodd ad basin attingatur atque ibi teretiusculus pennam passerinam crassitie haud exuperet, indiviso bifurcove, utrinque obsito secundariis, duplo longioribus, horizontalibus aut horizontaliter recurvis, sparsis, duarum triumve linearum intervallo inter utrumque, elongato-lineari-lanceolatis, scilicet ortu teretiusculis et perangustis, exinde se sensim, sed lenissimè, quod tamen magis in his quàm in illis exemplaribus valet, dilatantibus, apice acuminatis curvulisque, latitudine, ubi maxima, trium linearum; horum omnium margines, in parte teretiusculâ juxta basin nudos, utrinque cæteroquin obsidet series minorum, qui lineari-oblongi, basi apiceque leviter attenuati, obtusiusculi, integerrimi, patentés, intervallis brevibus sejuncti, plerumque simplices, rarius aliis minoribus pariter dispositis cincti, inferiores longissimi, et sæpe pollicares, reliqui, quo propiores apicibus ramorum, eo breviores.

FRUCTIFICATIO ramis ultimis imposita, e capsulis constans sphæricis, marginalibus, semi-immersis, papaveris seminum magnitudine, unâ modò in singulis ramis, includentibus globulum seminum minutissimorum, lætè rubrorum, subrotundorum, qui tamen vix tertiam capsulæ partem explet, quod restat composito e fibris parallelis, densè appressis, a centro ad margines radiatim excurrentibus, adeoque minutis ut vix summâ microscopii ope distinguantur.

COLOR purpurascens, livido fuscoque perfusus, subdiaphanus, *Soli objectæ* aut *in aquâ dulci servatæ* citò in lutescentem sordidè albicantem evanidus.

SUBSTANTIA gelatinoso-cartilaginea, tenera; *exsiccatæ* tenuis et cornea.

Obs. Per desiccationem adhæret chartæ: frondis dissectæ pars interior fibris tenuissimis impleta reperitur.

Si quærat quisnam sit inter Fucus cui hic assimilari debeat, *Fucus Radula* forsân proveniret indole atque substantiâ proximus. Nec dubium quin cum hoc et *F. stiriato* et affinibus *F. lividus* hic noster erit olim sub unâ redigendus familiâ. Formâ ab his omnibus abludit, propiorque est *Fuco Teedii*, cui substantia toto cælo diversa. *Menziesius*, nisi fallor, unicus hactenus legit.

a. <i>F. lividus</i> , magn. nat.			
b. <i>ramus</i> , e <i>summis</i> , magn. auct.	-	-	6.
c. <i>tuberculum dissectum</i>	-	-	5.
d. <i>semina (fibris immixta?)</i>	-	-	4.
e. <i>semina</i>	-	-	1.
f. <i>frons dissecta</i> , ut <i>fibræ internæ</i> appareant			3.

Fucus tridens, frond membranaceous, flat, linear, midribbed to near the apices, pinnatifid with scattered branches; the margin every where fimbriated with short, alternate, nearly square teeth, ending in two or three minute points.

Coast of New Holland. Péron.

Annual?

Root, I have not yet seen.

FROND, six inches, or perhaps considerably more, in length, (for I have never seen it entire,) preserving throughout its whole growth, in every part, an equal width of about a line and half, furnished with a thin midrib, which is blackish towards the base, but grows more pale as it advances, and near the apices entirely disappears, but this I have found in some degree variable in different specimens; the *primary branches*, though sometimes forked, are generally undivided, and are from top to bottom beset with others, which are alternate, distichous, patent, separated by intervals of about half an inch each, of various length from two or three lines to as many inches, the middle usually the longest, and these often bearing a third set disposed in the same manner, and like the rest, except that they are smaller; the apices are somewhat narrowed, but bluntish; the margins of all the branches, without distinction, are serrato-dentate, with alternate decurrent teeth, standing near to each other, about a line long, broad at their base, but ending in two or three bristle-shaped points, of which the lowest is generally the longest; it not unusually happens that some of these teeth are found considerably longer than the rest, and evidently about to shoot out into new branches: the whole frond, examined under a microscope, even of moderate power, appears beautifully reticulated with small oblong meshes.

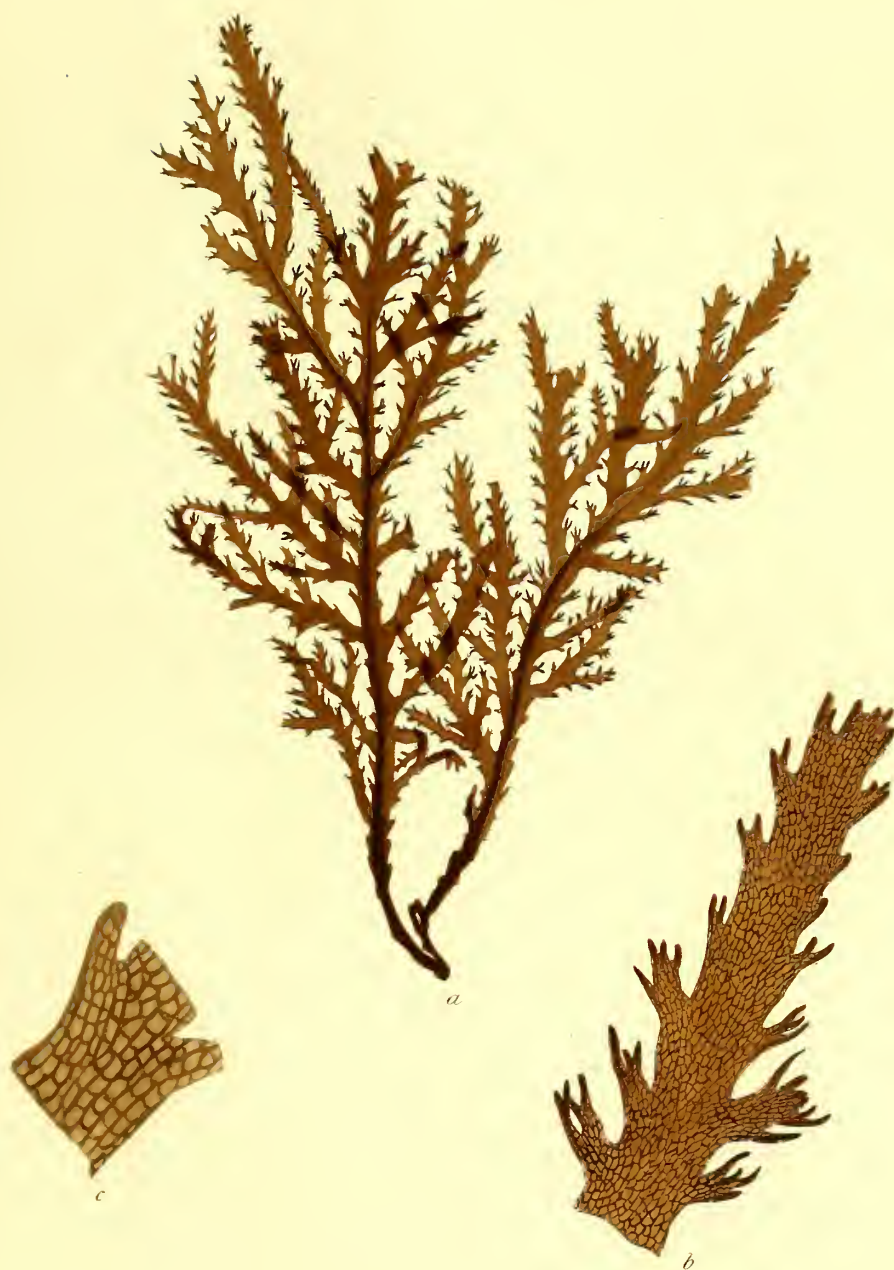
FRUCTIFICATION, unknown.

COLOR, pale chesnut-brown, semitransparent, darker when dry.

SUBSTANCE, membranaceous, thin, and tender.

The resemblance between the subject of the present plate and *F. fimbriatus*, already figured in a preceding volume of this work, is such as cannot fail to strike every observer. They agree in their substance, in their mode of growth, in their color, in their general habit, and in the reticulated structure of their frond. This last circumstance, however, is even more remarkable in *F. tridens* than in *F. fimbriatus*, or, I had almost said, than in any other known *Fucus*, and is a strong illustration of the regular, though to us imperceptible, gradations by which the Great Creator of all has connected the various works of his mighty hand, so interweaving the different parts of the great network of animated existence, as at once to shew His wisdom, and to baffle our feeble attempts at systematical arrangement. In this plant, which was first sent me by Professor Mertens, marked with the same specific name it here bears, are at once visible the thin delicate substance of an *Ulva*, the form and midrib of a *Fucus*, and an internal structure approaching to that of the *Confervæ*. I have, since that time, twice received it from M. Lamouroux, once called *Sauvagia multidentata*, and the other time *Plocamium multidentatum*, but I find neither of these names in his recent arrangement of the *Thalassiphytes*, nor can I discover that the plant is there introduced under any other appellation.

- | | | | | |
|--------------------------------------|---|---|---|----|
| a. <i>F. tridens</i> , natural size. | | | | |
| b. <i>branch</i> , magnified | - | - | - | 6. |
| c. <i>part of the same</i> | - | - | - | 3. |



Fucus luidens.

Fucus, fronde membranaceâ, planâ, lineari, ultra medium uninervi, ramis sparsis pinnatifidâ; margine ubique fimbriato dentibus alternis, brevissimis, subquadratis, apice bi-tri-cuspidatis.

HABITAT in Novæ Hollandiæ oris. Péron.

Annuæ?

RADIX a me nondùm visa.

FRONS sexpollicaris, aut forsan multo longior (integram enim non vidi) plana, latitudinem servans in omnibus ramis ubique eandem et sesquilineam ferè æquantem, uninervis, nervo tenui, basin versus nigricante, pallidiore quo altiùs surgit, et juxta apices prorsùs evanido; sed hoc in diversis exemplaribus variabile; frondis *rami primarii* nunc bifurci, nunc, quod sæpiùs accidit, indivisi, cincti per totam longitudinem aliis, vagè alternis, distichis, patentibus, intervallo inter singulos circitè semipollicari, attamen haud certo, his bipollicaribus, illis quadruplo brevioribus, mediis plerumque, nec tamen semper, longissimis, et his sæpe ferentibus alios simili ratione dispositos, præcedentiumque similes, nisi quòd sint minores; apices lenitè angustati, obtusiusculi; margines omnium, cùm primariorum, tùm ultimorum, ramorum serrato-dentati sunt, dentibus alternis, approximatis, decurrentibus, vix lineam longis, basi latiusculis, apice desinentibus in duos tresve denticulos brevissimos, setaceos, quorum inferus plerumque est longissimus; nec rarò accidit hos dentes elongatos inveniri, semet in novos ramos liquidò producturos: tota frons sub lente tantummodò modicè augente pulcherrimè reticulata apparet, areolis exiguis, oblongis.

FRUCTIFICATIO hactenus latet.

COLOR badius, semidiaphanus; *exsiccata* intensior.

SUBSTANTIA membranacea, tenuis et tenera.

Hâc in tabulâ quivis illicò agnoscet stirpem affinem *F. fimbriato*: substantia utrique est eadem, idem est color, idem crescendi modus, eademque ferè frondis textura reticulata; hæc verò in *F. tridente* maximè insignis; neque facilè reperietur notabilior inter Fucos; sed hîc, sicut alibi, observandum est quàm certi et simul quàm inopinati sint nexus per quos singula creata inter se conjunxerit Deus Optimus Maximus; in eâdem enim stirpe cernimus Fucorum planorum formam, Ulvarum substantiam teneram, et structuram Confervarum filiformium ferè similem. Primus mecum hanc plantam communicavit Mertensius, et eodem nomine specifico hîc adhibito notatam: mox a Lamou-rouxio, et bis quidem, accepi: *Plocamium multidentatum* appellaverat; sed neque sub hoc, neque sub alio quopiam nomine in novâ suâ *Thalassiophytorum dispositione* memoratam invenio.

- | | | |
|-----------------------------------|---|----|
| a. <i>F. tridens</i> , magn. nat. | | |
| b. <i>ramus</i> , magn. auct. - | - | 6. |
| c. <i>ejusdem pars</i> - | - | 3. |

Fucus Floresius, frond between membranaceous and gelatinous, flat, nerveless, tri-quadri-pinnatifid with scattered linear segments between erect and patent, the upper ones very narrow and bifid.

Fucus Floresius. CLEMENTE. p. 312.

On the coast of the kingdom of Seville. *Clemente*.—In the Red Sea. *Earl of Mountnorris*.

Annual?

ROOT, a very small, callous disk.

FROND, flat, without veins or midrib, narrow at the base, but immediately widening, and, before it is an inch high, becoming divided into three or four *branchès* from a foot to a foot and half in length, between patent and divaricated, not more than two lines wide at their origin, but gradually expanding till they attain to the width of half an inch or somewhat more, after which they continue linear till, as commonly happens, they are forked, when they decrease in size, and continue to do the same at every subsequent dichotomy; the number of the divisions is quite uncertain; the sides of the primary branches are throughout their whole length beset with *secondary* ones, placed without order, but commonly at intervals of a few lines, between horizontal and patent, always narrower than the first, but in other respects like them, some half a foot, others not more than half an inch long, and these mixed without any apparent order, most of them beset with a third series of shoots scarcely a line wide, which are either simple, or, in their turns, bear a fourth so short as to look only like spines, but still commonly forked, with patent segments.

FRUCTIFICATION, not yet discovered.

COLOR, deep-pink, inclining to blood-red, but, from exposure to the sun, soon becoming spotted with yellow, and turning at last to a dirty whitish; in a dry state it is a bright full red, and the frond then shines, as if varnished.

SUBSTANCE, thickish, extremely gelatinous, but rather tough.

OBS. In drying, it contracts to half its original size, and sticks close to paper.

It has been remarked with great justice by Linnæus, in the *Philosophia Botanica*, that such names of plants as have been given with the view of perpetuating the remembrance of meritorious Botanists ought always to be religiously preserved; and that this, the greatest reward to which a naturalist could aspire by his labors, should not only be maintained inviolate, but should be dispensed with caution, to the inciting of others as well as to the ornament of the science. But the great Swede has confined this observation to generic names alone, declaring that upon the subject of specific ones he entertains a different opinion, and thinks that none should be adopted except such as may serve to distinguish a plant from its congeners. This sounds excellently; and it were well for science could it be reduced to practice; but, unfortunately, every man at all conversant with this subject, knows that it cannot be so, and regrets the confusion to which the attempt has in many instances given birth. In the extensive genera of the Musci and Algæ such a scheme were particularly hopeless; and I therefore trust that pardon may be obtained for others as well as myself, who have ventured to depart from this maxim of our great master. Such has been the case with *Clemente* with respect to the present *Fucus*. The botanist whose name it commemorates is Don Francis Flores, a most diligent and acute investigator of the Fuci in the neighbourhood of Cadiz. This name therefore I trust it will retain; but it is soon, I understand, likely to receive another in France, where it is in contemplation to publish it, in the splendid work illustrative of Bonaparte's Egyptian expedition, under the appellation of *F. Proteus*. In color and general habit it agrees with *F. ciliatus*, to which it has unquestionably a strong natural affinity. But the shape of the branches will separate them, and still more so the gelatinous substance. In this latter respect it approaches *Ulva ligulata*; and indeed it appears so far intermediate between the Fuci and Ulvæ, that it would be difficult to form any conjecture as to what will ultimately be found to be its fructification.

a. *F. Floresius*, natural size.

b. *branch*, magnified - 6.



Fucus floridanus

Fucus, fronde membranaceo-gelatinosâ, planâ, enervi, tri-quadri-pinnatifidâ; laciniis sparsis, linearibus, erecto-patentibus, summis perangustis, bifidis.

Fucus Floresius. CLEMENTE. p. 312.

HABITAT prope Luciferi Fanum, inter Bastulos. *Clemente*.—In Mari Rubro. *Comes de Mountnorris*.

Annua?

RADIX callus perquàm exiguus, discoidens.

FRONS plana, nervi venarumque expers, ortu angusta, sed illicò dilatata, et, vix pollicis unius spatio intercedente, fissa in tres quatuorve ramos pedales aut sesquipedales, patenti-divaricatos, e basi angustiore sese sensim dilatantes, donec consecuti sunt latitudinem semipollicarem aut paullo ampliorem, quam postea immutatam servant, quatenus immutati ipsi manent, sed mox, ut plerumque fit, semel iterùmve vagè bifurci, diametro decrescunt; horum margines utrinque cingunt rami secundarii, absque normâ dispositi, sed plerumque aliquot linearum intervallis sejuncti, horizontalitèr patentes, primariorum, nisi quòd semper angustiores sint, similes, hi semipedales, alii semipollicares, longiores brevioribus nullâ regulâ servatâ immixtis, plerique obsiti tertiâ serie vix lineam latorum, nunc simplicium, nunc ferentium alios tam breves ut spiniformes modò videantur, apice ut plurimum bifurcos, segmentis patentibus.

FRUCTIFICATIO nulla hactenus detecta.

COLOR saturatè roseus in sanguineum vergens, lutescente, si *Soli obijciatur*, immixtus, et demùm sordidè albicans; *exsiccata* fit intensè ruber, nitetque frons, quasi vernice illita.

SUBSTANTIA crassiuscula, quàm maximè gelatinosa, attamen tenax.

OBS. Per desiccationem fit madente duplo minor, et chartæ arcuè adhæret.

De Plantarum nominibus in *Philosophiâ Botanicâ* monemur, “ea, ad Botanici optimè meriti memoriam conservandam constructa, sanctè servanda esse;” scilicet “hoc unicum et summum præmium laboris sanctè servandum et castè dispensandum esse ad incitamentum et ornamentum Botanices.” Sed hæc de nominibus tantummodò genericis tradit Linnæus: de specificis alitèr censet, eaque deposcit quæ stirpem ab omnibus congeneribus distinguant. Vetat autem ingens, quod, illo defuncto, res herbaria acceperit incrementum quominùs hoc semper fiat, et præsertim in talibus qualia nunc Algæ includunt generibus. Meam igitur non minùs quàm aliorum causam oro, quum contendo pro libertate imponendi plantis nondùm descriptis inventorum nomina, quod quidem de hoc Fuco præstitit Clemente, qui dicatum voluit “D^{no}. Francisco Flores, Fucorum Luciferi Fani indagatori diligentissimo acutissimoque.” Hic unus modò descripsit; sed sub *F. Proteos* nomine mox describendum nupèr accepi e Galliâ, quò viri docti ab Ægyptiacâ expeditione reduces tulerant. Colore habituque, quod aiunt, generali *F. Floresius* multùm cum *F. ciliato* consentit; huic certè naturâ affinis: ramorum forma distinguit, et magis adhuc substantia lubrica: per hanc accedit ad *Ulvam ligulatam*, atque ita eo usquè inter Fucos Ulvasque ambigit ut de fructu ne quidem conjecturâ augurari aliquid ausim.

- a. *F. Floresius*, magn. nat.
- b. *ramus*, magn. auct. - 6.

Fucus corneus, frond between cartilaginous and corneous, compressed, nerveless, irregularly branched; branches linear, attenuated at each end, bipinnate; pinnæ opposite, patent, obtuse, bearing at their apices elliptical capsules.

Fucus corneus. *Fl. Ang.* p. 585. *Linn. Trans.* III. p. 181. *WITH.* IV. p. 117. *Fl. Ped.* II. p. 332. *Ner. Brit.* p. 61. t. 12. *Syn. Fuc.* II. p. 272. (excl. syn. *F. pusilli*.) *Fl. Fr. Ed.* 2^{da}. II. p. 32. *Fl. Gall.* p. 6. *Eng. Bot.* XXVIII. t. 1970. *CLEMENTE.* p. 317.

Fucus spinosus. *GMELIN, Hist. Fuc.* p. 161. t. 18. f. 3.

F. ciliatus. *δ. Ner. Brit.* p. 91. t. 15. (excl. syn. *Gunn. et Esp.*)

Gelidium corneum. *LAMOUREUX, in Ann. du Mus. d'Hist. Nat.* XX. p. 129.

Fucus flavicans teretifolius, ramulis pennatim enascentibus. *RAII Syn.* p. 50. No. 49.

β. filicinus; frond setaceous; pinnæ horizontal, widened, very blunt.

Fucus corneus. β. Linn. Trans. III. p. 181. *Syn. Fuc.* II. p. 273.

F. filicinus. Fl. Ang. p. 586.

F. nereideus. Fl. Scot. p. 956.

γ. pinnatus; frond narrow, tripinnate; pinnæ patent, nearly linear, bluntish.

Fucus corneus. γ. Linn. Trans. III. p. 181. *Syn. Fuc.* II. p. 273.

F. pinnatus. Fl. Ang. p. 586.

F. sericeus. GMELIN, Hist. Fuc. p. 149. t. 15. f. 3. *ESPER, Ic. Fuc.* I. p. 158. t. 81. *WULFEN, Crypt. Aquat.* No. 17.

F. hypnoides. Fl. Atl. II. p. 426. *Fl. Fr. Ed.* 2^{da}. II. p. 32.

F. fimbriatus. DRAPARNAUD.

δ. uniformis; all the pinnæ patent, attenuated at the base, obtuse at the points and scattered.

Fucus corneus. δ. Linn. Trans. III. p. 181. *Syn. Fuc.* II. p. 273.

ε. capillaceus; frond narrow; pinnæ clustered towards its summits, nearly setaceous and somewhat erect.

Fucus corneus. ε. Syn. Fuc. II. p. 273.

F. capillaceus. GMELIN, Hist. Fuc. p. 146. t. 15. f. 1.

F. hypnoides. WULFEN, in Jacq. Coll. I. p. 352. *WULFEN, Crypt. Aquat.* No. 18.

ζ. deformis; frond twisted, irregularly pinnated; pinnæ divaricated, oblong, very short, undivided.

Fucus corneus. ζ. Syn. Fuc. II. p. 273.

η. Plumula; frond flat, narrow, pinnated; pinnæ setaceous, undivided.

Fucus Plumula. WULFEN, Crypt. Aquat. No. 19. *ESPER, Ic. Fuc.* I. p. 195. t. 107.

θ. spinæformis; frond subcylindrical, filiform, pinnated; pinnæ setaceous, undivided, slightly bent.

Fucus spinæformis. LAMOUREUX, Diss. Fuc. p. 77. t. 36. f. 3, 4.

ι. sesquipedalis; frond long, between compressed and flat, linear, tripinnate; ramuli lineari-oblong, short, obtuse.

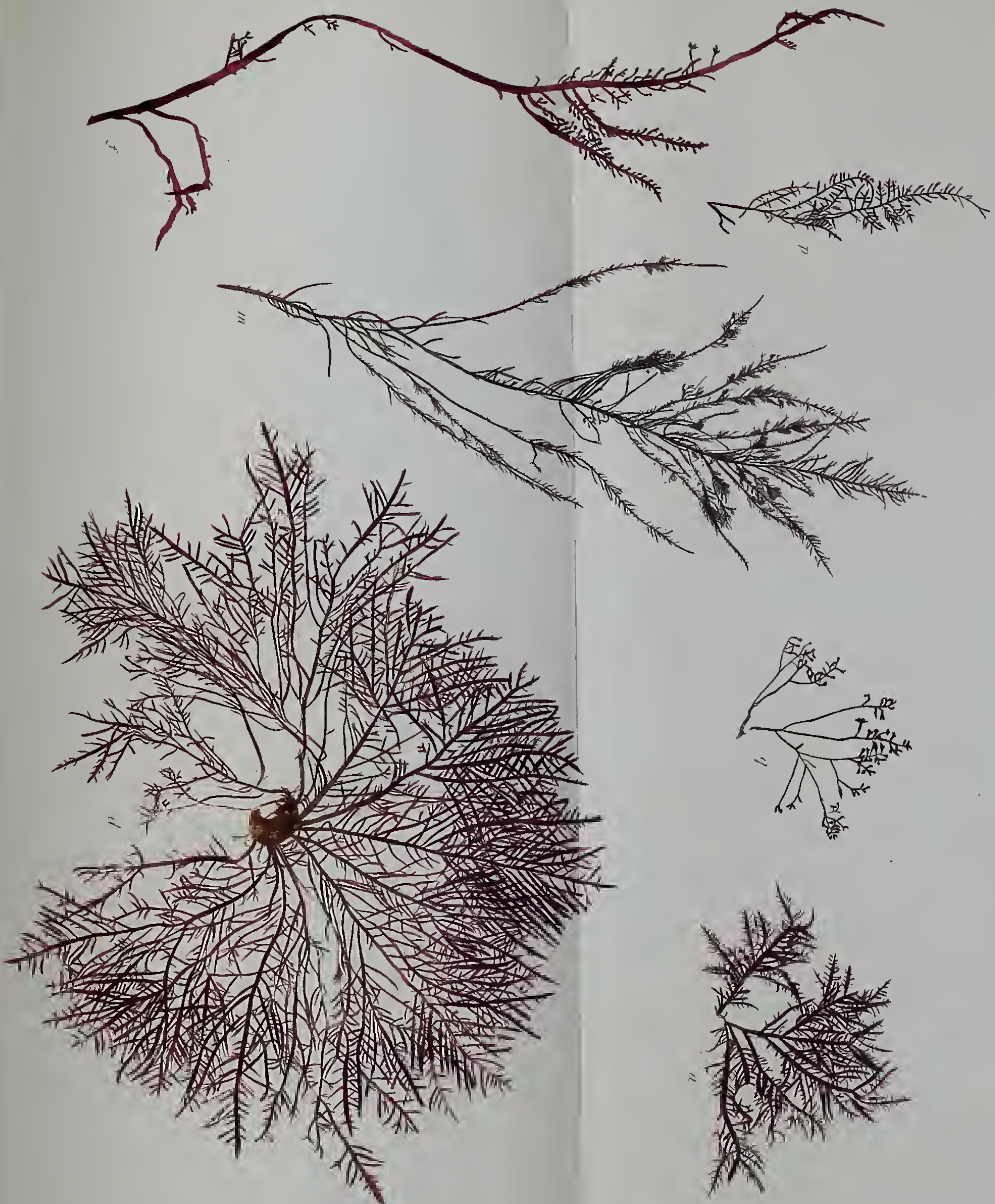
Fucus corneus, var. sesquipedalis. CLEMENTE. p. 317.

κ. confertus; frond compressed, repeatedly pinnated; ramuli long, very thin, clustered, irregularly divided.

λ. attenuatus; frond compressed, in the lower part simply pinnated, in the upper tripinnate; ramuli extremely short, some acute, others obtuse.

μ. pulchellus; frond capillary, compressed, tripinnate; pinnæ between linear and clavate, obtuse.

ν. clavifer; frond subcylindrical, capillary, irregularly divided; ramuli obovate, edged with minute, scattered teeth.



ξ. *abnormis*; frond compressed, irregularly branched; naked in its lower part; towards the middle generally bearing a few simple, scattered pinnæ; and near the apices clusters of short deflexed ramuli.

ο. *setaceus*; frond bi-tri-pinnate, setaceous in every part.

Most of the varieties are found upon the southern coast of England, of which and of the shores of France, Spain, and the Mediterranean, this *Fucus* is a native.—ξ at Exmouth. *Sir Thos. Frankland*.—ι in the Adriatic. *Wulfen*.—δ at the Isle of France and Madagascar. *Lamouroux*.—, near Cadiz. *Clemente*.—Coast of Portugal. *Dr. Linck*.—μ and ν Bantry Bay. *Miss Hutchins*.—Sidmouth and Portland Island. *Mr. T. Bland*.—ξ Cornwall. *Mrs. Griffiths*.—ο Red Sea. *Earl of Mountnorris*.

Perennial.—In the summer months.

ROOT, intermediate between solid and fibrous, consisting of a small callous disk, which throws out a great number of compressed, linear, branching shoots, that cover to a considerable extent, in a thickly interwoven mass, the rocks or stems of larger *Fuci*.

FRONDS, growing in tufts, from two to three inches long, and thrice or more frequently pinnated, between compressed and flat, without midrib or veins, scarcely half a line wide, and every where linear, except at the base, where they are attenuated; *primary branches* usually once or twice irregularly forked, with segments of nearly equal height, all of which, though generally naked near the base, and often continuing so for half their length, are in the upper parts constantly pinnated with other similar branches, between patent and divaricated, scattered, separated by intervals of a few lines between each, the lower an inch long, the rest gradually shortening towards the summit of the frond, so that the length of the highest scarcely exceeds a line; hence the outline of the top of each branch is widely triangular; the smaller of these branches are simple, the rest pinnate or bipinnate; each succeeding series being less than that before it; the apices are slightly widened and rounded; the margins quite entire.

FRUCTIFICATION, placed upon the summit of the pinnæ, which then swell into small, lanceolate or elliptical *capsules*, containing a few, extremely minute, deep-red, roundish seeds; it occasionally happens that two capsules are to be seen on the same pinna, one placed beneath the other, with a short space between them; and it is by no means unusual to see the capsules terminated by a short blunt mucro formed from the elongation of the pinna.

COLOR, very beautiful, between pink and bright red, often tinged with purple, and in some instances quite purple, always semitransparent, and soon fading into a dirty whitish.

SUBSTANCE, cartilaginous, thin, inclining to horny when dry, but constantly flexible and tough.

Sixteen years have now elapsed since it was observed, in the *Synopsis of the British Fuci*, that “the Botanist to whom the task shall hereafter fall of writing the history of *F. corneus*, and of describing, not only the varieties known in Britain, but those also which are produced by the shores of the Atlantic or the Mediterranean, will find the office of nicely separating its different appearances, and of pointing out the limits marked by nature between these and the adjoining species, a task of greater difficulty than he can readily imagine.” Such a task I had then hoped would have fallen into the hands of those whose local situation would have better qualified them for executing it: that it is no trifling one will easily be seen from the strangely different forms represented on our plate, from the number of varieties described above, and from the almost endless perplexity of the synonyms. Upon the subject of the history of the plant a few words will suffice. That it was not unknown to the more early Botanists is clear, from its being preserved in Buddle’s herbarium, and from its having a place in *Ray’s Synopsis*; but among those of comparatively modern date, Hudson must be considered the first by whom it was mentioned. His name therefore is retained. Nor have I ventured upon referring it to any of the works of Linnæus; for though there is in his herbarium a specimen of it, under the name of *F. cartilagineus*, and marked with the number which proves it to be the plant originally designed in the *Species Plantarum*; yet, as there are with it four specimens of what has always since been called *F. cartilagineus*, and as Linnæus himself, in his *Mantissa*, quotes to this species the *F. versicolor* of Gmelin, I have felt that to attempt any change would only be giving rise to greater errors than that which I was desirous of rectifying. To suppose that Linnæus had carefully examined both and considered them the same, would be carrying our complaisance to him too far; yet such is the case with Professor Mertens, who sent me specimens to prove his opinion. I cannot, however, I own, think with him; and it is fortunate for those who study these productions, that though no part perhaps of the vegetable creation contains a plant that is liable to more extraordinary changes in its form, yet, in the midst of all these, it is still but little liable to be confounded with the adjoining species. Those to which it bears most resemblance are, *F. pusillus*, *F. crinalis*, and *F. filicinus*; and under each of these is pointed out how it differs from

F. corneus. With regard to the long list of varieties, I fear I shall be accused of having needlessly swelled it; and yet I can assure my readers, it would have been more easy and satisfactory to have doubled their number. But, from the length to which they have necessarily led the account of the plant, I have abstained from a minute description of each, trusting that the characters above given will, with the plate in which the most remarkable are figured, sufficiently serve to distinguish them. Several of them, as appears from the list of synonyms, have been previously regarded as distinct species, and probably will again be so in future. It is also probable that a portion of those now for the first time described, will hereafter obtain the same distinction. Nothing but an herbarium containing a very full assortment of specimens can prevent this. The frequently lateral position of the fructification in my *Variety* ι , is perhaps the most extraordinary among the changes to which *F. corneus* is liable. In the *Variety* ν , the ultimate pinnae, by a very singular sportiveness of nature, considerably resemble, when magnified, the ramuli of *F. pristoides*. I could go on, enumerating something remarkable in almost every one, but I must conclude, only adding that *F. corneus* of Gmelin may possibly belong to this plant, but that his figure and description are such as I dare not quote.

- | | | | | | |
|--|---|---|---|---|----|
| a. <i>F. corneus</i> , natural size. | | | | | |
| b. part of a specimen from the Linnaean herbarium. | | | | | |
| c. portion of the same, magnified | - | - | - | - | 6. |
| d. <i>Var.</i> γ , natural size. | | | | | |
| e. <i>Var.</i> ζ . | | | | | |
| f. <i>Var.</i> ι . | | | | | |
| g. branch of the same, magnified | - | - | - | - | 6. |
| h. part of the branch | - | - | - | - | 5. |
| i. another portion | - | - | - | - | 5. |
| k. section of a capsule | - | - | - | - | 3. |
| l. seeds | - | - | - | - | 1. |
| m. <i>Var.</i> λ , natural size. | | | | | |
| n. branch of the same. | | | | | |
| o. part of the branch, magnified | - | - | - | - | 6. |
| p. <i>Var.</i> μ , natural size. | | | | | |
| q. <i>Var.</i> ν . | | | | | |
| r. <i>Var.</i> ξ . | | | | | |
| s. branch of the same, magnified | - | - | - | - | 6. |

Fucus, fronde cartilagineo-corneâ, compressâ, enervi, ramosissimâ; ramis linearibus, utrinque attenuatis, sub-bipinnatis; pinnis oppositis, patentibus, obtusis, apice capsuliferis; capsulis ellipticis.

Fucus corneus. *Fl. Ang.* p. 585. *Act. Soc. Linn.* III. p. 181. *With.* IV. p. 117. *Fl. Ped.* II. p. 332. *Ner. Brit.* p. 61. t. 12. *Syn. Fuc.* II. p. 272. (excl. syn. *F. pusilli*.) *Fl. Fr. Ed.* 2^{da}. II. p. 32. *Fl. Gall.* p. 6. *Eng. Bot.* XXVIII. t. 1970. *CLEMENTE*. p. 317.

Fucus spinosus. *GMELIN, Hist. Fuc.* p. 161. t. 18. f. 3.

F. ciliatus. *ð. Ner. Brit.* p. 91. t. 15. (excl. Syn. *Gunn. et Esp.*)

Gelidium corneum. *LAMOUROUX, in Ann. du Mus. d'Hist. Nat.* XX. p. 129.

F. flavicans teretifolius, ramulis pennatim enascentibus. *RAII Syn.* p. 50. No. 49.

β. filicinus; fronde setaceâ; pinnis horizontalibus, dilatatis, obtusissimis.

Fucus corneus. β. Act. Soc. Linn. III. p. 181. *Syn. Fuc.* II. p. 273.

F. filicinus. Fl. Ang. p. 586.

F. nereideus. Fl. Scot. p. 956.

γ. pinnatus; fronde angustâ, tripinnatâ; pinnis patentibus, sub-linearibus, obtusiusculis.

Fucus corneus. γ. Act. Soc. Linn. III. p. 181. *Syn. Fuc.* II. p. 273.

F. pinnatus. Fl. Ang. p. 586.

F. sericeus. GMELIN, Hist. Fuc. p. 149. t. 15. f. 3. *ESPER, Ic. Fuc.* I. p. 158. t. 81. *WULFEN, Crypt. Aquat.* No. 17.

F. hypnoides. Fl. Atl. II. p. 426. *Fl. Fr. Ed.* 2^{da}. II. p. 32.

F. fimbriatus. DRAPARNAUD.

ð. uniformis; ramis ramulisque patentibus, basi attenuatis, sparsis, obtusis.

Fucus corneus. ð. Act. Soc. Linn. III. p. 181. *Syn. Fuc.* II. p. 273.

ε. capillaceus; fronde angustâ; pinnis suprâ confertis, sub-setaceis, erectiusculis.

Fucus corneus. ε. Syn. Fuc. II. p. 273.

F. capillaceus. GMELIN, Hist. Fuc. p. 146. t. 15. f. 1.

F. hypnoides. WULFEN, in Jacq. Coll. I. p. 352. *WULFEN, Crypt. Aquat.* No. 18.?

ζ. deformis; fronde tortâ, vagè pinnatâ; pinnis divaricatis, oblongis, brevissimis, indivisis.

Fucus corneus ζ. Syn. Fuc. II. p. 273.

η. Plumula; fronde planâ, angustâ, pinnatâ; pinnis setaceis, indivisis.

Fucus Plumula. WULFEN, Crypt. Aquat. No. 19. *ESPER, Ic. Fuc.* I. p. 195. t. 107.

θ. spinæformis; fronde teretiusculâ, pinnatâ; pinnis setaceis, indivisis, curvulis.

Fucus spinæformis. LAMOUROUX, Diss. Fuc. p. 77. t. 36. f. 3, 4.

ι. sesquipetalis; fronde elongatâ, compresso-planâ, lineari, tripinnatâ; ramulis lineari-oblongis, brevibus, obtusis.

Fucus corneus, var. sesquipetalis. CLEMENTE. p. 317.

κ. confertus; fronde compressâ, decomposito-pinnatâ; ramulis elongatis, tenuissimis, confertis, vagè divisus.

λ. attenuatus; fronde compressâ, infrâ simpliciter, suprâ tripinnatâ; ramulis brevissimis, acutis obtusisque.

μ. pulchellus; fronde compressâ, capillaceâ, tripinnatâ; ramulis lineari-clavatis, obtusis.

ν. clavifer; fronde teretiusculâ, capillaceâ, vagè ramosâ; ramulis obovatis, spinoso-dentatis.

ξ. abnormis; fronde compressâ, vagè ramosâ; infrâ denudatâ; medium versus sæpe pinnis aliquot sparsis, setaceis, simplicibus obsitâ; suprâ ramulis confertis, deflexis, brevibus instructâ.

o. *setaceus*; fronde bi-tri-pinnatâ, totâ setaceâ.

HABITANT pleræque e varietatibus in Angliæ Meridionalis, Galliæ, Hispaniæ et Maris Mediterranei oris.—ξ apud Exmouth, in Devoniâ. *D. T. Frankland, Baronettus.*—η in Mari Adriatico. *Wulfen.*—θ Insulæ Franciæ et Madagascar ad oras. *Lamouroux.*—ι prope Gades. *Clemente.*—In Lusitaniæ littoribus. *D. Linck.*—μ et ν in sinu, Bantry Bay dicto. *D^{na}. Hutchins.*—Apud Sidmouth et Portlandiæ Insulam. *D. T. Bland.*—ξ in Cornubiâ. *D^{na}. Griffiths.*—ο in Mari Rubro. *Comes de Mountnorris.*

Perennis. Æstate fert fructum.

RADIX inter discoideam et fibrosam media; scilicet e callo constans exiguo, discoideo, surculos plurimos, compressos, lineares, ramosos, latè repentes, densèque intertextos emittens.

FRONDES cæspitosæ, bi-tri-pollicares, et ter sæpiùsve pinnatæ, compresso-planæ, nervi venarumque expertes, vix semilineam latæ, et ubique ferè lineares, nisi quòd basi sint attenuatæ; *rami primarii* plerumque semel iterùmve vagè dichotomi, segmentis subfastigiatis, quorum omnia, quamvis plerumque juxta basin et interdùm ad dimidiam altitudinem nuda, superiora versus semper sunt pinnata *aliis ramis* sui similibus, patenti-divaricatis, sparsis, intervallo aliquot linearum inter singulos, inferioribus pollicaribus, reliquis quo magis ad apices appropinquant eo gradatim brevioribus, ut summi vix lineam exuperent et cujusque rami pars superior peripheriâ deltoidea evadat: ramorum brevissimi simplices, longissimi iterùm atque iterùm simili ratione sunt pinnati, utrâque serie præcedentibus brevior, cæteroquin simili; apices lenitè dilatati, rotundati; margines ubique integerrimi.

FRUCTIFICATIO pinnarum sita ad apices, qui tunc intumescences fiunt *capsulæ* lanceolatæ ellipticæve, semina includentes aliquot minutissima, intensè rubra, subrotunda,—interdùm accidit duas in eâdem pinnâ reperiri capsulas, catenatim dispositas, spatio perbrevis interposito; nec infrequentèr desinunt capsulæ in mucronem exiguum, pinnâ longiùs productâ.

COLOR amœnissimè e roseo ruber, purpurascens sæpe perfusus, aut aliquandò totus purpurascens, subdiaphanus, citò tamen in sordidè albicantem evanidus.

SUBSTANTIA cartilaginea, tenuis, *per desiccationem* sub-cornea, semper lenta et tenax.

Diversæ hujusce Fuci formæ quas tabula nostra exhibet, plurimæ quæ in descriptione recensentur varietates, et, quod magis adhuc valet, synonymorum “labor et inextricabilis error,” clarissimè indicant non inconsulta esse effata in *Fucorum Britannicorum Synopsi*, illius haud leve fore pensum cui continget *F. corneum* describere. De historiâ hujus stirpis pauca sufficient. Si reperiatur in Herbario Buddleiano, si a Raio in *Synopsi* enumeretur, attamen inter recentiores Hudsoni contigit gratia quòd primus descripserit. Retinetur igitur nomen ab illo inditum, Linnæo prætermisso; cujus tamen in phytophylacio exemplar extat, *F. cartilagineus* inscriptum, et quidem iis notatum numeris qui indubias *Specierum Plantarum* stirpes designant. Hujus exemplaris ego frustulum huic tabulæ (b, c,) inserendum curavi; sed cùm reperiatur etiam ibi idem Fucus quem alii *F. cartilagineum* dixerunt, et cùm Linnæus ipse in *Mantissâ F. versicolore* Gmelini pro synonymo citaverit, nihil mutandum putavi, ne, re jam compositâ, nova confusio, vel in vero quærendo, oriretur. Censet Mertensius *F. cartilagineum* et *F. corneum* specie non differre, misitque exemplaria ad hanc sententiam stabiliendam; sed assentiri nequeo; et quamvis nulla ferè detur, vel inter phænogamas vel inter cryptogamas, planta, cujus facies diversæ tantoperè inter se discrepent, gratulari tamen nobis licet, quòd nulla ferè sit, quæ, quantumvis formâ ludat, sibi tamen semper tantum constet. Quos maximè refert Fucos hi sunt, *F. pusillus*, *F. crinalis* et *F. filicinus*, quibus sub singulis enumerantur notæ ad discriminandum. Quod ad varietates attinet, multas quidem recensui, timeoque ne plures quàm quod necesse erat recensuisse putarer; sed facilè numerum duplicavissem; fecissemque et plenam cuique descriptionem adjecissem, nisi satis superque jam dictum sim ratus. Characteres suprâ datos, icone adjectâ, satis fore ad distinguendas spero: non desunt, ut per synonymiam liquet, quæ pro distinctis habitæ sunt speciebus: inter novas aliæ forsitan ita postea existimabuntur; nec nisi per copiosissimum exemplarium delectum fieri potest ut res alitè sese haberet. Fructificatio in *Varietate*, aliquandò, nequaquam verò semper, lateralis maximè præter spem cadit. *Varietas*, lente aucta ostendit in ramulorum formâ quiddam ad *F. pristoidem* accedens. Sunt alia etiam memoratu digna quæ de reliquis quoque varietatibus proferri possent; sed satis jam dictum.

a. *F. corneus*, magn. nat.

b. *portio exemplaris ex herbario Linnaeano.*

c. *ejusdem pars*, magn. auct.

d. *Var. γ*, magn. nat.

6.

e. <i>Var. ζ.</i>			
f. <i>Var. ι.</i>			
g. <i>ejusdem ramus</i> , magn. auct.	-	-	6.
h. <i>pars ejusdem</i>	-	-	5.
i. <i>alia pars ejusdem</i>	-	-	5.
k. <i>capsula dissecta</i>	-	-	3.
l. <i>semina</i>	-	-	1.
m. <i>Var. λ</i> , magn. nat.			
n. <i>ejusdem ramus</i> .			
o. <i>pars ejusdem</i> , magn. auct.	-	-	6.
p. <i>Var. μ</i> , magn. nat.			
q. <i>Var. ν.</i>			
r. <i>Var. ξ.</i>			
s. <i>ejusdem ramus</i> , magn. auct.	-	-	6.

Fucus cornutus, frond cartilaginous, flat, nerveless, seldom branched, beset with distichous, alternate, patent, subulate ramuli, some simple, others pectinate, bearing on their inner side subulate incurved capsules.

Cape of Good Hope. Mr. Burchell.

ROOT, composed of numerous, compressed, closely interwoven fibres, of the same color and substance as the frond, and spreading in wide patches over shells and other submarine bodies.

FRONDS, numerous from the same root, growing in tufts, between flat and compressed, preserving from the base to the summit an everywhere equal width of less than a line, wholly devoid of midrib or veins, generally once or twice irregularly forked, and, except near the root, beset throughout their whole length with distichous, alternate, patent ramuli, standing at very short distances from each other, scarcely two lines in length, some simple, others bearing at their sides two or three others, which are still smaller, are subulate, subcylindrical, set so close as to touch each other, and are between erect and patent, yet slightly incurved: all of them are quite entire at their margins: of the larger, some appear as if it were likely they would lengthen into branches.

FRUCTIFICATION, situated upon the ramuli in their inner side, consisting of three or four extremely small, subulate-setaceous, incurved capsules; but these in my specimens were so young that it was impossible to discover the contents.

COLOR, a bright red, like that of bricks, in the recent plant; fading to a pale orange, from being kept long in fresh water.

SUBSTANCE, between cartilaginous and membranaceous.

Specimens of this *Fucus* were sent me some years ago by Professor Mertens; but I have lately received it in a more perfect state from my friend, Mr. Burchell, whose recent return from the Cape of Good Hope is likely to form an important epoch in our knowledge of the Natural History of Southern Africa; loaded as he is come with the various treasures, which an expedition for five continued years, through countries scarcely ever trodden by Europeans, has enabled a man of his activity and knowledge to collect. For my own part I can only lament that he did not return sooner: this work might otherwise have received material assistance from his kindness. But to regrets of this nature there would never be an end, whatever number of years might be allotted to the publication. The length of time already bestowed upon it has given rise to other and more serious sources of regret: among them none is so great as the loss of my friends, whose communications have chiefly enabled me to render it what it is; and among these friends there is assuredly none whom I have in every point of view so much reason to lament as Miss Hutchins. That I have by her untimely death been deprived of a most able assistant, and that Botany has lost a votary, as indefatigable as she was acute, and as successful as she was indefatigable, this work bears abundant testimony; and the *Lichenographia Britannica*, should it ever be published, will do so no less unequivocally. But few, if any, except myself, can appreciate her many amiable qualities; her liberality, her pleasure in communicating knowledge, her delight in being useful, the rapture she felt in tracing the works of the divine hand, and the union in her of those virtues which embellish and improve mankind. Three years have now elapsed since she died, and every succeeding year makes me more deeply feel what I have lost, and how with her is gone a great part of the pleasure I derived from these pursuits.

" In every season of the beauteous year
 " Her eye was open, and with studious love
 " Read the divine Creator in his works.
 " Chiefly in thee, sweet spring, when every nook
 " Some latent beauty to her wakeful search
 " Presented, some sweet flower, some virtual plant.
 " In every native of the hill and vale
 " She found attraction, and, where beauty fail'd,
 " Applauded odour or commended use."

- | | | | |
|------------------------------------|---|---|----|
| a. <i>F. cornutus</i> , nat. size. | | | |
| b. branch, magnified | - | - | 6. |
| c. part of the same | - | - | 3. |



Fucus cornutus.

Fucus, fronde cartilagineâ, planâ, enervi, sub-ramosâ, obsitâ ramulis distichis, alternis, patentibus, subulatis, simplicibus pectinatisque, integerrimis, margine superiore capsuliferis; capsulis subulatis, incurvis.

HABITAT ad Promontorium Bonæ Spei. D. Burchell.

RADIX fibrosa, fibris compressis, densè intertextis, ejusdem qui frondi coloris atque substantiæ, et latè perreptantibus conchas aliave corpora submarina.

FRONDES, ut e radicibus fibrosis, cæspitosæ, palmares, plano-compressæ, latitudinem haud unius lineæ, ubique æqualem, a radice ad apicem servantes, nervo venisque prorsus carentes, plerumque semel iterùmve vagè bifurcæ, et utrinque obsitæ per totam longitudinem ramulis distichis, alternis, patentibus, approximatis, integerrimis, adedque brevibus ut vix duas lineas longitudine exuperent, his simplicibus, illis utrinque ferentibus duos tresve minores, subulatos, teretiusculos, approximatos, erecto-patentes, attamen lenitè incurvos, interdum elongatos, quasi semet in novos producturi sint ramos.

FRUCTIFICATIO ramulorum lateri interiori imposita, e capsulis aliquot constans subulato-setaceis, minutissimis, incurvis, quarum tamen ætas non satis propecta semina detegere vetuit.

COLOR recentis pulchrè lateritius; *exsiccatæ* idem; in aquâ dulci diu servatæ dilutè aurantiacus.

SUBSTANTIA cartilagineo-membranacea.

F. cornuti nomen huic Fuco olim imposuit Mertensius, a quo aliquot abhinc annis accepi. Nupèr verò exemplar in hâc tabulâ depictum et quidem Mertensianis perfectius, fructu tamen maturo carens, communicavit mecum amicissimus D. Burchell, qui ad Promontorium Bonæ Spei non parçè legit. Hujus per exoptatum reditum nova, uti sperare licet, affulsura est lux historiæ naturali Africæ Australis: redit enim spoliis omnigenis onustus, quæ in itinere quinquenali per regiones vix antea Europæis tritas mens in indagando insatiabilis, corpus paritèr indefessum, et eximia rerum naturalium scientia vires ad colligendum subministravere. Maturior reditus multa forsàn huic operi contulisset; sed non idcirco est dolendum. Quotannis enim progreditur Historia Naturalis, et sapientior esset ille qui expectaret dum deflueret amnis, quàm ille qui donec omnia creata detecta essent ante aliquid faciendum operiretur. In tali quale hoc est opus per multos annos continuato alia dolori causa extat. Lugendi sunt amici quos plurimos anni prædati sunt euntes. Mortuus est Mohrius, vir, si quis alius, acutus: mortua est Dna. Hutchins, præ omnibus deflenda, et cujus tam cari capitis desiderio nec pudor est nec modus. Hujus industriam, ingenii acumen, benevolentiam, maximaque erga me beneficia, plurimæ hujus operis paginæ testantur; neque minùs testabitur *Lichenographia Britannica*, si prelo diu subjecta unquàm in lucem prodeat. Sed iudulgere liceat dolori, liceatque ingemere morte immaturâ virginis lectissimæ, sextis sui verè ornamenti, in investigando non minùs auspiciatæ quàm acutæ, ad communicandum nunquam nou paratæ, et tum semper felicissimæ quum aut amicis benefacere posset, aut Naturæ opera scrutando clamaret, "Divinus est hæc qui creavit Artifex." Talis tamen tantaque est mortua; mortua est ante diem, qualiter optimi ferè omnes; neque aliud nisi triste desiderium nobis reliquit, dum, quantum perdidit mecum ipse reputans, Shenstonianum illud triste attamen dulcissimum decanto,

"Heu, quanto minus est

"Cum reliquis versari

"Quàm tui meminisse!"

a. *F. cornutus*, magn. nat.

b. *ramus*, magn. auct. - - 6.

c. *ejusdem pars* - - - 3.

FINIS.



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* It is entirely by mistake that this plant, both in the description and on the plate, is called *F. pilulifer*, a name previously given to a very different species: the reader is therefore requested to alter it.

† This synonym to *F. graminifolius* has appeared since the publication of that plant in this work.

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* It was by an oversight that this synonym was omitted in the description of *F. Brownii*. (see p. 130.)
† This synonym was also omitted by oversight.

ERRATUM.

For *F. pilulifer*, t. 236. p. 94. read *F. globulifer*.

